

THE REPUBLIC OF THE SUDAN



REPORT  
OF THE

MEDICAL SERVICES, MINISTRY OF HEALTH

FOR THE YEAR

1963/1964



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## CHAPTER I

### INTRODUCTION

On the whole rainfall was lower than last year, with Equatoria recording the highest. No shortage of grain occurred.

#### Epidemic Diseases

The year was free from Small-Pox and, as concerns Cerebrospinal Meningitis, only sporadic cases were reported from all the Provinces, with Blue Nile recording the highest incidence. The number of cases for the whole country totalled 927 as against 1559 for last year.

#### Endemic Diseases

A total of 802,625 cases of Malaria was recorded during the year as against 784,010 in the previous one (please also see W.H.O. Assisted—Malaria Project Report).

The control of Bilharziasis with chemical and mechanical barriers in the Gezira Irrigated Area continues as usual.

The incidence of Trypanosomiasis continued to scale down with the regular strict routine inspections and therapeutic prophylaxis of Lomidine. Only 27 cases were recorded as against 41 last year.

#### Curative Field

On this side, two hospitals, 24 dispensaries and 18 dressing stations were opened during the year.

### INTERNATIONALLY ASSISTED PROJECTS

#### Tuberculosis

Routine tuberculin testing and protection with B.C.G. Vaccination continued in the permanent Provincial Centres. The totals for testing and vaccinations carried out in these centres amounted to 273,904 and 154,891 respectively. Mass-scale operations continued in Blue Nile (North area) and Wadi Halfa.

In Wad Medani Tuberculosis Control, Demonstration and Training Centre, in accordance with the standard method established. 13,270 attendants were seen (5238 new and 8032 old cases). 5933 persons were covered with tuberculin test and 1805 with B.C.G. Vaccination, while 6317 home visits were achieved.

#### Malaria Project

The Project continued to progress according to plan and the year has recorded tremendous activities in this field. The Pre-eradication Programme has officially commenced in June, 1963, laying its main emphasis during 1963/64 on the assessment and evaluation of the existing general health services and in this respect guidelines of the procedure adopted for the countrywide surveys, were developed from a preliminary assessment conducted in Sennar Rural Council Area. The objective of the assessment surveys, apart from being geared to give optimum health facilities to the population, is to provide maximum support for the future Malaria Eradication Programme. So far assessment was completed in the Northern Province and Southern Area of Kassala and is in course in the Red Sea Area.



In Sennar after the Malaria Eradication Training Centre has been established with all the necessary facilities, a re-orientation and refresher courses started in September/October, 1963 for National Personnel of Malaria Pre-Eradication Programme, Malaria Eradication Training Centre and Malaria Eradication Demonstration and Training Operations, Khashm El Girba.

In Khashm El Girba, in October, 1963, the Resettlement Area with buffer zone along the Atbara River from Shówak in the South to Goz Ragab in the North was selected for malaria eradication demonstration and training operations, following a request from the Ministry. The plan of action envisaged simultaneously attack with D.D.T. spraying and active and passive case finding.

All resettlers were given malaria drug prophylaxis which was followed up in their Settlement Area new homes where they were immediately covered by case detection system.

General spraying operations were carried out in November/December, 1963 and May/June, 1964 using D.D.T. 75 per cent W.D.P.

#### **Rural Health Demonstration Project—El Huda**

Through funds provided by the Gezira Board it was possible to construct, adopting designs participated to, by experts of W.H.O., UNISCO and University of Khartoum, three experimental latrines and four houses.

All school children at El Huda and Tabat were medically examined and systematic visits by Medical Assistants to the villages in the neighbourhood started

#### **Small-Pox Eradication Campaign**

The Internationally-assisted Nation-wide Vaccination Campaign against Small-Pox which was launched the previous year, continued and 3,220,954 persons were covered in the Blue Nile (Northern Division), Khartoum, Northern and Kassala Provinces.

#### **High Nursing College—Khartoum**

There were 40 girls under training in the 3 classes during the year.

11 girls graduated this year including two Libyans on W.H.O. fellowship.

#### **Onchocerciasis Control Project**

During the year treatment of sufferers in the Pilot Project Area around Wau town which started in 1961, continued. Entomological surveys under the supervision of W.H.O. Entomologist who arrived in March, 1963, were established all over country and during the 2nd half of 1963 a national counter-part was appointed for the W.H.O. Entomologist as well as a Public Health Officer to shoulder the administration side of the entomological section. Surveys commenced in the Blue Nile (North Area) and Kassala in August/December, 1963 and in February, 1964 in the Northern Province, to continue for a complete cycle of one year before control measures can be organized. The future policy is to adopt both methods *i.e.* treatment of sufferers and destruction of vector.

#### **Communicable Eye-Diseases Project**

Established early in 1963 after the arrival of W.H.O. Ophthalmologist in December, 1962, this Project will proceed as a Pilot programme in Atbara-Berber Area for two years and then expand gradually to cover the whole province.

During the year 12,000 of the rural and urban population have received treatment.



## Halfa Resettlement Ophthalmological Unit

This unit continued its work during the year 1963/64 on similar lines to those of the trachoma and Communicable Eye-Diseases Project of Atbara Area. It started work in February 1962 and the majority of the women and children population of the area received treatment. The work was much curtailed when the actual movement of the population to the Resettlement Area took place and it is therefore proposed to reorganize the treatment scheme again in the new Area.

## U.N.I.C.E.F.

This Organization is extending appreciable help to mother and child welfare centres, midwifery, nursing schools (junior), Tuberculosis, Malaria Project and school of Hygiene through provision of milk, vitamins, mineral tablets and transport.

## Fellowships

The following candidates were awarded Study Courses during the year :—

NAME	Nature of Study	Country
Dr. M. A. El Gaddal .. .. .	Malaria Eradication (Study Tour)	Ethiopia, Pakistan and Iran
Dr. M. Kamal Mohd. Medani .. .. .	D.P.H. .. .. .	U.K.
Miss Hikmat Talib Ismail .. .. .	Radiotherapy .. .. .	U.K.
Sayed Abdel Ghani Omer .. .. .	Statistics .. .. .	Lebanon
Sayed Abdel Mutalib Mohed. .. .. .	Statistics .. .. .	Lebanon
Sayed Mahmoud Gubara .. .. .	Statistics .. .. .	Lebanon
Dr. Shakir Musa .. .. .	Training Course on the Epidemiology and Bacteriology of Enteric Infection .. .. .	Tahran
Sayed Omer Taha El Gabbani .. .. .	Drug Control .. .. .	U.A.R.
Sayed Mustafa Hassan Ahmed .. .. .	Community Development .. .. .	U.A.R.
Sayed Mohd. Mustafa Humeda .. .. .	Psychiatric Nursing .. .. .	Lebanon
Sayed Abdalla Taour Obeid .. .. .	Psychiatry (DPM) .. .. .	Lebanon
Dr. Tahir Abdel Rahim .. .. .	Inter-Regional Training Course for Industrial Hygienists .. .. .	U.K.
Sayed Zuhair A. Atabani .. .. .	Nutrition .. .. .	Yugoslavia
Dr. M. El Mardi El Mamoun .. .. .	Tuberculosis Training Course .. .. .	London and Ibadan
Dr. Abdin M. Sharaf .. .. .	Midwifery and Health Visiting .. .. .	Praque and Copenhagen
Miss Kaltoum Agab Ali .. .. .	International Advanced Course in M.C.H. .. .. .	U.K.
Dr. Abdel Hamid El Sayed .. .. .	Malaria Eradication (Study Tour)	Poland
Sayed Kh. B. El Bedri .. .. .	Diploma Psychiatry .. .. .	Lebanon-Syria, Pakistan, India and Manila
Dr. Osman Abdu Mohed. .. .. .	Sister-Tutors Diploma .. .. .	U.K.
Miss Berlanti Zaki .. .. .	Heart & Chest Diseases (Nursing) .. .. .	..
Miss Khadiga Idris .. .. .	Theatre Supervisors Course .. .. .	..
Miss Aziza Ramadan .. .. .	Diploma Anaesthesia .. .. .	..
Dr. Abdel Ghani Farah .. .. .		

18 delegates from the Ministry of Health have attended the following Conferences or Seminars :—

NAME	Conference or Seminar	Date
Dr. T. A. Baasher .. ..	Annual Meeting of the World Federation for Mental Health, Amsterdam	22-26 July, 1963
Dr. M. F. Shaddad .. ..	Symposium on Medical Education, Karachi .. .. .	5-17 Aug., 1963
Dr. M. R. Farid .. )	W.H.O. Sub-Committee (A) Alexandria	20-26 Aug., 1963
Sayed Yousif Fadl .. )		
Dr. Ali Daw El Beit .. ..	Inter-Regional Travelling Seminar on the Organization of Epidemiological Services, U.S.S.R. .. ..	7-23 Oct., 1963
Sayed Omer Ibrahim Medani ..	Inter-Regional Seminar on Public Health Aspects of Housing, U.S.S.R.	14-30 Oct., 1963
Dr. El Sheikh A. Rahman )	Medical Radiation .. .. .	21-25 Oct., 1963
Sayed Ahmed Ibrahim Idris )		
Dr. Ali M. Nur .. .. )	Seminar on Vital and Health Statistics	
Dr. Osman Ibrahim .. ..	Damascus .. .. .	October, 1963
Dr. Anis M. A. El Shami )		
Dr. M. H. Satti .. ..	W.H.O. Expert Committee on Yellow Fever, Geneve .. .. .	29-31 Oct., 1963
Dr. Mohed. Ibrahim El Imam	Inter-Regional Seminar on Health Aspects of Industrialization, Dacca, E. Pakistan .. .. .	6-16 Nov., 1963
Dr. M. R. Farid .. ..	W.H.O. Expert Committee in the Control of Enteric Diseases, Geneve ..	12-18 Nov., 1964
Dr. M. R. Farid .. ..	Meeting of National Fellowships Officers, Alexandria .. .. .	26-28 Nov., 1963
Dr. Hassab El Rasoul Suleiman	Aide-Memorie on the Arab States Workshops on Family and Child Welfare in Relation to Urbanization, U.A.R. .. .. .	30 Nov.—9 Dec. 1963
Dr. Ali Nur .. .. )	W.H.O. General Assembly, Geneve ..	March, 1964
Dr. Mohd. Osman A/Nabi )		

Some 45 vititors from W.H.O. and various other countries visited the Sudan either in connection with the abovementioned projects or on fellowships study tours.



CHAPTER II

**ADMINISTRATION**

**(A) STAFF AND FUNCTIONS**

Table I shows the establishment of classified staff. Some categories of the Professional and technical staff were still under establishment. The Table includes officials serving on secondment with Local Government Authorities.

**Personnel**

TABLE I

Statistics of Classified staff Establishment covering the period 1.7.1963 to 30.6.1964.

CATEGORY	Establishment	
	Sudanese	Expatriate
<b>HEADQUARTERS :—</b>		
Under Secretary .. .. .	1	—
Deputy Under Secretary (Preventive) .. .. .	1	—
Deputy Under Secretary (Curative) .. .. .	1	—
Asst. Under Secretary (Rural Health) .. .. .	1	—
Asst. Under Secretary (Preventive) .. .. .	1	—
Chief Tuberculosis Division .. .. .	1	—
Chief Public Health Inspector .. .. .	1	—
Senior Establishment Officer .. .. .	1	—
Inspector of Administration .. .. .	1	—
Establishment Officer .. .. .	1	—
Asst. Establishment Officer .. .. .	1	—
Principal School of Hygiene .. .. .	1	—
Principal Matron .. .. .	1	—
Asst. Principal Matron .. .. .	1	—
Head Staff Clerk .. .. .	1	—
Secretary to Minister of Health .. .. .	1	—
Staff Clerk .. .. .	7	—
Senior Clerk .. .. .	11	—
Clerk (Including T.B.T. Centre) .. .. .	28	—
Staff Clerk (Statistics) .. .. .	2	—
Clerk (Statistics) .. .. .	14	—
Junior Clerk (Including Minister of Health Office) .. .. .	11	—
<b>FINANCE BRANCH :—</b>		
Controller of Accounts .. .. .	1	—
Inspector of Accounts .. .. .	1	—
Head Accounts .. .. .	2	—
Accountant .. .. .	7	—
Senior Book-Keeper .. .. .	10	—
Draftsman .. .. .	1	—
Book-Keeper .. .. .	23	—
Junior Book-Keeper .. .. .	3	—
Saraf .. .. .	1	—
<b>STORES SECTION :—</b>		
Chief Medical Supplies .. .. .	1	—
Controller, Medical Stores .. .. .	1	—
Pharmacist .. .. .	—	1

CATEGORY	Establishment	
	Sudanese	Expatriate
Asst. Controller, Medical Stores .. .. .	1	—
Inspector of Drugs .. .. .	1	—
Supt. of Stores .. .. .	3	—
Inspector of Instruments .. .. .	1	—
Stock Verifier .. .. .	1	—
Senior Store-Keeper .. .. .	6	—
Store-Keeper .. .. .	30	—
Store-Keeper Under Training (Northern Hospitals) ..	10	—
Telephone Operator .. .. .	1	—
	194	1
HOSPITALS AND DISPENSARIES :—		
Senior Physician and Director-Khartoum Hospital ..	1	—
Senior Surgeon .. .. .	1	—
Senior Obst. and Gynaecologist .. .. .	1	—
Senior Chest Physician .. .. .	1	—
Senior Ophthalmologist .. .. .	1	—
Senior Psychiatrist .. .. .	1	—
Physician .. .. .	9	—
Pathologist .. .. .	—	1
Cardiological Technician .. .. .	—	1
Surgeon .. .. .	12	4
Ear, Nose and Throat Surgeon .. .. .	—	1
Chest Physician .. .. .	2	—
Psychiatrist .. .. .	2	—
Radiologist .. .. .	2	1
Anaesthetist .. .. .	4	—
Registrar in Anaesthesia .. .. .	2	—
Gynaecologist .. .. .	10	—
Ophthalmologist .. .. .	13	—
Registrar .. .. .	4	—
General Duty Doctor (Including Study Courses) ..	239	5
Houseman .. .. .	60	—
Senior Dental Surgeon .. .. .	1	—
Dental Surgeon .. .. .	5	3
Dental Officer .. .. .	4	—
Dental Mechanic .. .. .	—	2
Pharmaceutical Registrar .. .. .	1	—
Pharmacist .. .. .	2	—
Lay Administrator .. .. .	1	—
Supt. Radiography .. .. .	1	—
Clinical Pathologist .. .. .	1	—
Senior Dispenser .. .. .	5	—
Dispenser .. .. .	23	—
Dispenser Under Training .. .. .	12	—
Senior Radiographer .. .. .	1	—
Radiographer .. .. .	44	—
Asst. Radiographer Under Training .. .. .	10	—
X-Ray Technician .. .. .	1	—
Hospital Manager .. .. .	5	—
Dark Room Technician .. .. .	1	—
Electrical Engineer .. .. .	1	—
Laboratory Technician .. .. .	—	3
Senior Medical Assistants .. .. .	15	—
Medical Assistant .. .. .	587	—
Mental Health Assistant .. .. .	3	—
Ophthalmic Assistant .. .. .	30	—
Refractionist .. .. .	20	—
Senior Nursing Instructor .. .. .	2	—
Nursing Instructor .. .. .	41	—
Theatre Attendant .. .. .	89	—



CATEGORY	Establishment	
	Sudanese	Expatriate
Head Humarrid .. .. .	72	—
Senior Clerk .. .. .	11	—
Clerk .. .. .	36	—
Card Clerk .. .. .	3	—
Junior Clerk .. .. .	25	—
Senior Book-Keeper .. .. .	15	—
Book-Keeper .. .. .	22	—
Junior Book-Keeper .. .. .	53	—
Saraf .. .. .	2	—
Senior Store-Keeper .. .. .	1	—
Store-Keeper .. .. .	28	—
Junior Store-Keeper .. .. .	66	—
Telephone Operator .. .. .	6	—
Quarantine Overseer .. .. .	2	—
NURSING STAFF :—		
Matron Khartoum Hospital .. .. .	—	1
Matron Omdurman Hospital & N.T. School .. .. .	—	1
Hospital Matron (W/Medani, Port Sudan, El Fasher, Juba, and Atbara) .. .. .	4	2
Asst. Matron .. .. .	7	—
Charge Sister .. .. .	14	—
Physiotherapist .. .. .	—	5
Nursing Sister .. .. .	19	13
School Supervisor (Nursing College) .. .. .	1	—
A/Nursing Sister .. .. .	29	—
Dietician Sister .. .. .	—	1
Sister Tutor .. .. .	1	—
Ward Sister .. .. .	—	16
Staff Midwifery .. .. .	6	—
	1,694	60
PUBLIC HEALTH :—		
Province Medical Officer of Health .. .. .	11	—
Asst. Province Medical Officer of Health .. .. .	9	—
Woman Doctor .. .. .	1	—
Senior Public Health Inspector .. .. .	29	—
Public Health Inspector .. .. .	35	—
Port Health Officer .. .. .	1	—
Public Health Officer .. .. .	84	—
Public Health Officer Under Training .. .. .	60	—
Principal Midwifery Training School .. .. .	—	1
Principal Health Visitors Training School .. .. .	1	—
Asst. Chief Public Health Inspector .. .. .	2	—
Asst. Principal Health Visitors Training School .. .. .	1	—
Asst. Principal Midwifery Training School .. .. .	1	—
Health Visitor .. .. .	44	—
Senior Staff Midwife .. .. .	6	—
Staff Midwife .. .. .	17	—
Asst. Supt. Nursing Officer .. .. .	2	—
Senior Health Visitor .. .. .	6	—
Supt. Midwifery Training School .. .. .	6	—
Supt. Nursing Officer .. .. .	12	—
Senior Sanitary Overseer .. .. .	1	—
Sanitary Overseer .. .. .	22	—
Junior Sanitary Overseer .. .. .	178	—
Public Health Student Under Training .. .. .	60	—
Senior Technical Clerk .. .. .	1	—
Clerk .. .. .	7	—
Junior Clerk .. .. .	12	—
Junior Book-Keeper .. .. .	1	—



CATEGORY	Establishment	
	Sudanese	Expatriate
Staff Clerk .. .. .	3	—
Senior Book-Keeper .. .. .	1	—
Book-Keeper .. .. .	1	—
	615	1
RESEARCH AND LABORATORIES :—		
A. <i>Stack Medical Research</i> :		
Asst. Director Research .. .. .	1	—
Bacteriologist .. .. .	2	—
Medical Zoologist .. .. .	1	—
Pathologist .. .. .	1	—
Registrar .. .. .	1	—
Supt. Laboratory .. .. .	1	—
Laboratory Technician .. .. .	18	—
Laboratory Technician Trainee .. .. .	8	—
Senior Laboratory Assistant .. .. .	14	—
Laboratory Assistant .. .. .	116	—
Head Laboratory Attendant .. .. .	2	—
Junior Technical Assistant .. .. .	1	—
Senior Clerk .. .. .	1	—
Laboratory Attendant .. .. .	1	—
Clerk .. .. .	1	—
Junior Clerk .. .. .	2	—
B. <i>Chemical Laboratories (W.C.L.)</i> :		
Government Analyst .. .. .	1	—
Deputy Government Analyst .. .. .	2	—
Asst. Government Analyst .. .. .	1	—
Scientific Officer .. .. .	5	—
Chief Pharmaceutical Section .. .. .	—	1
Senior Technical Assistant .. .. .	2	—
Pharmaceutical Chemist .. .. .	1	—
Technical Assistant .. .. .	8	—
Assistant Scientific Officer Under Training .. .. .	4	—
Junior Technical Assistant .. .. .	3	—
Clerk .. .. .	2	—
Library Clerk .. .. .	1	—
C. <i>Medical Entomology</i> :		
Medical Entomologist .. .. .	—	1
Asst. Scientific Officer Under Training .. .. .	4	—
Asst. Scientific Officer .. .. .	1	—
Entomological Technician .. .. .	1	—
Technical Assistant .. .. .	1	—
Junior Technical Assistant .. .. .	1	—
Junior Clerk .. .. .	2	—
D. <i>Schistosomiasis</i> :		
Biologist .. .. .	—	1
Senior Technical Assistant .. .. .	1	—
Technical Assistant .. .. .	1	—
Clerk .. .. .	1	—
Store-Keeper .. .. .	1	—
	215	3
E. <i>Graphic Museum</i> :		
Asst. Gurator .. .. .	1	—
Technical Assistant .. .. .	1	—
Museum Attendant .. .. .	1	—
	3	—

## SUMMARY OF CALSSIFIED STAFF

SECTION	Establishment	
	Sudanese	Expatriate
Headquarters and Stores Section .. .. .	194	1
Hospitals and Dispensaries .. .. .	1,694	60
Public Health .. .. .	615	1
Stack Medical Research .. .. .	171	—
Chemical Analytical Section .. .. .	30	1
Medical Entomology .. .. .	10	1
Schistosomiasis .. .. .	4	1
Graphic Museum .. .. .	3	—
<b>GRAND TOTAL .. ..</b>	<b>2,721</b>	<b>65</b>

Unclassified staff excluding Casual labour numbered 7173 approximately.

## PHYSICIANS ETC. PRACTISING IN THE SUDAN

OCCUPATIONS	Government Officials Serving in Min. of Health	Private Practice
Physician (including Chest Physician) .. ..	12	—
Surgeon (including E.N.T. Surgeon) .. ..	18	—
Obstet. and Gynaecologist .. .. .	11	—
Ophthalmologist .. .. .	14	—
Psychiatrist .. .. .	3	—
Radiologist .. .. .	3	—
Anaesthetist .. .. .	6	—
General Duty Doctor .. .. .	244	124
Dentist.. .. .	13	25
Pharmacist .. .. .	3	60
Dispensers .. .. .	28	—
Medical Assistant .. .. .	602	—

## (B) LEGISLATION

The following legislation was enacted during the year and published in the Legislative Supplement to the Republic of the Sudan Gazette No. 987 dated 15th. Sept., 1963 :

# PHARMACY AND POISONS ORDINANCE

(Please see Pages 81—95)

TABLE 2 (A)

## INCOME AND EXPENDITURE OF THE MINISTRY OF HEALTH OVER THE LAST 4 YEARS

	1960;61	1961;62	1962;63	1963/64
	LS.	LS.	LS.	LS.
<i>Revenue</i> .. .. .	96,499	125,554	178,367	187,976
<i>Expenditure</i>				
Personnel .. .. .	2,253,896	1,929,248	2,032,000	2,161,612
Services .. .. .	2,155,181	2,340,674	2,712,451	2,162,966
Extra-ordinary .. .. .	37,244	40,895	42,843	24,996
TOTAL .. .. .	4,446,301	4,310,817	4,787,294	4,349,574

TABLE 2 (B)

## ANALYSIS OF EXPENDITURE OF THE MINISTRY OF HEALTH FOR 1963/64

	Personnel	Services	Extra- Ordinary	Total
	LS.	LS.	LS.	LS.
Headquarters .. .. .	126,920	572,950	24,996	724,866
Hospitals .. .. .	1,854,727	1,431,022	—	3,285,749
Hygiene and Public Health .. .. .	75,380	143,221	—	218,601
Research .. .. .	102,158	15,773	—	117,931
Graphic Museum .. .. .	2,427	—	—	2,427
Seconded Staff .. .. .	—	—	—	—
TOTAL .. .. .	2,161,612	2,162,966	24,996	4,349,574

**REMARKS** :—1963/1964 figures are based on actual expenditure.



CHAPTER III  
PUBLIC HEALTH  
(A) HEALTH OF OFFICIALS

NATIONALITY	No. of Officials Employed	No. Placed on Sick List	No. of Days Sick	AVERAGE DAYS SICKNESS	
				for all Officials	For those who were Sick
Sudanese .. ..	19,954	12,613	46,423	2.33	3.68
Non-Sudanese ..	384	55	203	0.53	3.69

(B) GENERAL HEALTH  
EXPANSION OF HOSPITAL SERVICES

The following Hospitals were opened for work during the year :

HOSPITAL	No. of Beds:
El Managil (Blue Nile Province) .. .. .	60
Hassaheissa (Blue Nile Province) .. .. .	60

The building of the following 60 bedded Hospitals was completed during the year. They will operate soon :—

Kuttum (Darfur Province)  
Ghorashi (Blue Nile Province)  
Yirrol (Bahr El Ghazal Province)  
Hawata (Kassala Province)

Other buildings that were completed during year appear in the following list :—

PROVINCE	LOCALITY	BUILDING ERECTED
Bahr El Ghazal ..	Wau Wau Wau Aweil Wau	Senior Standard house for Medical Officer M/Standard house for Medical Officer Health Centre 2 Thirty—bedded wards Midwifery School
Blue Nile .. ..	Sennar Sennar Sennar	12 bedded Maternity Ward 16 bedded Male 2nd. Class Ward 16 bedded Female 2nd. Class Ward

PROVINCE	LOCALITY	UILLDINGS ERECTEDB
Kassala .. .. .	Kassala	Dental Out-Patient Department
	"	House for Physician
	"	House for Dental Surgeon
	"	Additional wards for 1st. Class
	"	Nursing School
	El Gedaref	New—Out—Patient Department
Equatoria .. .. .	Sources Yubu	Maternity Ward
	Li-Rangu	House for Medical Assistant
	" "	Office for Bash Munarid
Kordofan .. .. .	El Obeid	Eye Hospital
	Um Ruaba	Children Ward
	El Nahud	Mess for Nurses
Northern .. .. .	Atbara	4—roomed quarter
	"	Additional rooms to quarters
	"	Alteration to Sisters Mess
Upper Nile .. .. .	Malakal	Female 2nd. Class Ward

The Programme of expansion of Dispensaries and dressing Stations included the following additions :

PROVINCE	New Dispensaries	New Dressing Stations
Bahr El Ghazal .. .. .	1	—
Blue Nile .. .. .	10	1
Darfur .. .. .	4	—
Equatoria .. .. .	—	—
Kassala .. .. .	—	10
Kordofan .. .. .	3	3
Northern .. .. .	—	3
Upper Nile .. .. .	6	1
TOTAL .. .. .	24	18

TABLE 4

**WORK DONE IN HOSPITALS AND  
DISPENSARIES FOR 10 YEARS**

YEAR	Admissions	Attendances	Operations
1954/55 .. .. .	171,092	16,453,892	38,285
1955/56 .. .. .	154,093	17,694,550	38,287
1956/57 .. .. .	176,761	20,430,070	53,839
1957/58 .. .. .	175,543	21,410,339	50,023
1958/59 .. .. .	216,538	24,730,031	64,556
1959/60 .. .. .	185,601	23,999,256	86,771
1960/61 .. .. .	190,962	29,932,923	88,992
1961/62 .. .. .	219,188	28,970,936	109,731
1962/63 .. .. .	205,020	33,697,201	124,409
1963/64 .. .. .	213,489	37,397,118	107,232

There were 133 licensed private practitioners working independently during the year under review. The figures of their work do not appear in the above list.

**ACTIVITIES OF SPECIAL DEPARTMENTS  
IN HOSPITALS**

**Dental Clinics**

Work done by these departments in all Provinces during the year is as follows :—

Number of Attendances .. .. .	142,132
Extractions .. .. .	91,220
Conservations .. .. .	6,616
Scaling and Gum Treatment .. .. .	35,228
Minor Oral Surgical Cases .. .. .	2,961

**X-Ray Treatment—Khartoum**

Number of X-Ray Films taken for Out-Patients and In-Patients during the year was 35,462.

**Physiotherapy Department—Khartoum**

Number of attendances during the year was 46,908. Total number of patients was 2,782.



(C) VITAL STATISTICS

Below is the estimated population of the Sudan rendered by the Department of Statistics as on 30th. June, 1964.

TABLE 5

APPROXIMATE ESTIMATION OF POPULATION  
BY PROVINCES

PROVINCE					Men	Women	Children	Total
Bahr El Gazal	..	..	..	..	395,000	374,000	559,000	1,328,000
Blue Nile	..	..	..	..	750,000	714,000	1,190,000	2,654,000
Darfur	..	..	..	..	456,000	532,000	681,000	1,669,000
Equatoria	..	..	..	..	336,000	355,000	449,000	1,140,000
Kassala	..	..	..	..	441,000	329,000	476,000	1,246,000
Khartoum	..	..	..	..	213,000	166,000	271,000	650,000
Kordofan	..	..	..	..	661,000	665,000	930,000	2,256,000
Northern	..	..	..	..	263,000	317,000	515,000	1,095,000
Upper Nile	..	..	..	..	352,000	325,000	465,000	1,142,000
TOTAL ..					3,867,000	3,777,000	5,536,000	13,180,000

TABLE 6

*Estimated Population of Khartoum, Khartoum North  
and Omdurman*

Khartoum	..	..	..	..	..	..	..	136,000
Omdurman	..	..	..	..	..	..	..	167,000
Khartoum North	..	..	..	..	..	..	..	57,000
Rural Areas	..	..	..	..	..	..	..	321,000
TOTAL .. ..								681,000

These figures include migrants in the Three Towns.



TABLE 7

*Crude Birth Rate—Khartoum, Khartoum North  
and Omdurman*

TOWN	No. of Registered Births	Crude Birth Rate
Khartoum .. .. .	6,535	48.1
Khartoum North and Rural Areas .. ..	6,685	17.7
Omdurman .. .. .	6,398	38.3
TOTAL .. .. .	19,618	28.8

The above figures show births attended and registered by licensed midwives. Births attended by unlicensed midwives are not registered. So the above crude birth rate is not complete.



(D) PREVENTIVE MEDICINE

1. Insect Borne Diseases

(i) **Malaria.** This disease is one of the major Public Health Problems. Residual adult mosquito control with Gammexane Spraying is gradually being expanded in all Provinces. Larval control is being effected in big towns with gradens and Agricultural Schemes.

Following tables give figures for cases and control activities.

TABLE 8  
MALARIA INCIDENCE

YEAR	BAHR EL GHAZAL			BLUE NILE			DARFUR			EQUATORIA			KASSALA			KHARTOUM			KORDOFAN			NORTHERN			UPPER NILE		
	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.	Cases	D.	Mean Rain-fall mm.
1959/60 ..	16,916	36	936	74,150	25	462	41,390	23	538	103,667	77	1,298	74,634	37	321	20,257	10	294	189,548	74	544	16,346	3	80	29,226	29	802
1960/61 ..	31,592	35	1,021	77,620	25	353	67,198	16	548	165,966	107	1,248	57,074	17	224	17,631	3	79	160,908	79	515	14,850	4	214	52,472	50	806
1961/62 ..	28,140	54	1,094	100,356	41	469	98,847	27	584	234,673	131	1,667	87,533	35	298	31,098	8	239	141,838	93	507	14,875	9	50	43,127	21	927
1962/63 ..	34,832	68	1,119	67,744	25	495	96,748	28	541	239,889	80	1,480	76,379	1	305	27,876	3	208	94,164	142	557	13,126	13	60	133,252	15	912
1963/64 ..	47,347	53	897	87,031	35	425	82,526	19	483	239,451	94	1,268	61,304	14	246	28,454	—	93	105,938	60	515	13,334	5	17	137,240	24	829

SPACIES OF PARASITES IN 7,500 POSITIVE SLIDES

PROVINCE				<i>P. Falciparum</i>	<i>P. Vivax</i>	<i>P. Malaria</i>
Bahr El Ghazal	..	..	..	418	68	—
Blue Nile	..	..	..	1,123	65	—
Darfur	..	..	..	480	18	2
Equatoria	..	..	..	2,028	28	16
Kassala	..	..	..	424	117	—
Khartoum	..	..	..	60	10	—
Kordofan	..	..	..	1,006	37	—
Northern	..	..	..	344	97	—
Upper Nile	..	..	..	1,064	54	41
TOTAL				6,947	494	59

SPRAYING ACTIVITY IN THE WHOLE COUNTRY

PROVINCE			Provisional Census	No. of Population Protected	No. of Rooms, etc. Sprayed	Amount of Insecticides Used (L.B.)
Bahr El Ghazal	..	..	1,328,000	40,658	25,136	18,010
Blue Nile	..	..	2,654,000	1,550,072	1,945,966	554,020
Darfur	..	..	1,669,000	430,107	316,554	39,425
Equatoria	..	..	1,140,000	98,521	71,359	14,487
Kassala	..	..	1,246,000	920,903	578,597	88,078
Khartoum	..	..	650,000	8,770	2,365	900
Kordofan	..	..	2,256,000	600,310	291,123	59,556
Northern	..	..	1,095,000	645,500	400,132	100,003
Upper Nile	..	..	1,142,000	103,058	47,035	49,680
TOTAL			13,180,000	4,397,899	3,678,267	924,159





# SUMMARY REPORT OF THE MALARIA SERVICE'S ACTIVITIES

1963/1964

## 1. Malaria Pre-Eradication Programme (W.H.O. assisted, Sudan-6)

The Malaria Pre-Eradication Programme of the Republic of the Sudan, which has officially commenced in 16th. June, 1963, has during 1963/64 laid its main emphasis on the assessment and evaluation of the already existing General Health Service. A preliminary assessment has been conducted in Sennar R.C. area on its basis the guidelines were developed for the procedure adopted for the country-wide surveys, which cover all curative health establishments as well as the preventive services. All information is being gathered by the staff of the Malaria Pre-Eradication Programme. So far the assessment was completed in Northern Province and in Kassala Province Southern Division, surveys being in course in Red Sea Area. Evaluation of the data of Northern Province has reached an advanced stage.

The General Health Service survey is to form the basis for the planning of the Basic Health Service, whose development is to be geared towards granting an optimum of health facilities to the population, and providing maximum support to the future Malaria Eradication Programme of the Sudan.

For the purposes of assessment, planning and development of the General Health Service as well as for the running of the future Malaria Eradication Programme, the Sudan has been divided into 4 major regions, which probably also will form the stages of both programmes:—

- |            |   |   |
|------------|---|---|
| REGION I   | : | Northern Province, Khartoum Province, Kassala Province, and Blue Nile Province—Northern Division. |
| REGION II  | : | Blue Nile Province—Southern Division, Kordofan Province, and Renk R.C. (Upper Nile Province).     |
| REGION III | : | Darfur Province.  |
| REGION IV  | : | Upper Nile Province (Without Renk R.C.), Bahr El Ghazal Province, and Equatoria Province.         |

The Malaria Pre-Eradication Programme has also initiated action towards standardization of malaria drug treatment and laboratory diagnostic procedure.

## 2. Malaria Eradication Training Centre, Sennar (assisted by WHO and German Government)

After suitable premises became available in Sennar, the Malaria Eradication Training Centre has been established with all necessary installations and equipment. A re-orientation and refresher course was held in September/October, 1963 for all national personnel of Malaria Pre-Eradication Programme, Malaria Eradication Training Centre, and Malaria Eradication demonstration and Training Operations, Khashm El Girba.

Shortage of national and international key personnel has impeded the timely continuation of the Training Centre's activities. Meanwhile the staff was engaged in assisting the former Malaria Pilot Project in Sennar R.C., which is to be converted into Malaria Eradication Demonstration and Training Operations, serving as a Field Training Area for the Centre.

3. Malaria Eradication Demonstration and Training Operations,Khashm El Girba

In October, 1963 the Resettlement Area of Khashm El Girba and a buffer zone along the Atbara River, extending from Showak in the south to Goz Regab in the north, were selected for Malaria Eradication Demonstration and Training Operations, following a request by the Ministry of Health. The programme was under the technical guidance, advice and evaluation by the Malaria Pre-Eradication Programme, Ministry of Health.

After training of the relevant staff, epidemiological and technical surveys as well as geographical reconnaissance were carried out and a Plan of Action prepared which envisages the simultaneous running of attack phase operations by spraying with D.D.T., and of active and passive case detection.

All resettlers leaving Wadi Halfa area were given malaria drug prophylaxis, which was followed up in the Resettlement Area until they were established in their new homes, where they were immediately covered by the case detection system.

General spraying operations were carried out in November/December, 1963 and in May/June, 1964, using D.D.T. 75 per cent w.d.p. at a dosage of 2 g techn. DDT/m2

(ii) Blackwater Fever

1 case was reported this year compared to 1 case last year.

(iii) Relapsing Fever

No case was reported this year. Last year also no case was recorded.

TABLE 9

*Relapsing Fever cases and deaths over the last ten years*

YEAR							Cases	Deaths
1954;55	..	..	..	..	..	..	3	1
1955;56	..	..	..	..	..	..	1	—
1956;57	..	..	..	..	..	..	4	—
1957;58	..	..	..	..	..	..	2	—
1958;59	..	..	..	..	..	..	—	—
1959;60	..	..	..	..	..	..	6	—
1960/61	..	..	..	..	..	..	22	—
1961;62	..	..	..	..	..	..	7	—
1962;63	..	..	..	..	..	..	—	—
1963;64	..	..	..	..	..	..	—	—

(iv) Leishmaniasis

4,206 cases were reported this year as compared with 2,486 cases last year. Most of the cases were reported from Blue Nile, Upper Nile and Kassala Provinces.



TABLE 10

*Leishmaniasis Province Distribution 1963/64*

PROVINCE	Cases	Deaths
Bahr El Ghazal .. .. .	6	—
Blue Nile .. .. .	1,722	40
Darfur .. .. .	60	—
Equatoria .. .. .	179	7
Kassala .. .. .	352	16
Khartoum .. .. .	32	—
Kordofan .. .. .	226	6
Northern .. .. .	—	—
Upper Nile .. .. .	1,629	12
TOTAL ..	4,206	81

TABLE 11

*Leishmaniasis Recorded Incidence in ten years*

YEAR	No. of Cases
1954/55 .. .. .	1,106
1955/56 .. .. .	1,889
1956/57 .. .. .	7,463
1957/58 .. .. .	3,939
1958/59 .. .. .	8,414
1959/60 .. .. .	4,017
1960/61 .. .. .	5,077
1961/62 .. .. .	4,693
1962/63 .. .. .	2,486
1963/64 .. .. .	4,206

**(v) Trypanosomiasis**

New cases detected were 27 with 4 deaths. In 1962/63 cases reported were 41 with no deaths.

The disease is endemic in the western Districts of Equatoria Province. Regular Sleeping Sickness inspection is carried out in all endemic areas for case finding. Chemoprophylaxis was being conducted during the first three months of the year, in Yei District.

Following Table shows the distribution of cases for 10 years in Equatoria Province.



TABLE 12  
*Trypanosomiasis Distribution of Cases in Equatoria  
Province in Ten Years*

YEAR			Tembura Sub-Dist.	Yambio	Yei	Maridi	Other Localities	Total
1954/55	..	..	—	467	92	1	1	561
1955/56	..	..	2	210	98	—	—	310
1956/57	..	..	18	871	74	4	4	971
1957/58	..	..	34	37	88	—	—	159
1958/59	..	..	8	37	118	4	2	169
1959/60	..	..	24	—	223	—	15	262
1960/61	..	..	19	1	258	—	2	280
1961/62	..	..	13	—	65	—	3	81
1962/63	..	..	14	1	23	1	2	41
1963/64	..	..	6	—	20	1	—	27

(vi) **Filariasis**

4,202 cases were microscopically diagnosed during the year, of which 4,051 cases were reported from Equatoria Province.

**2. EPIDEMIC AND ENDEMIC DISEASES**

i) **Yellow Fever**

No case of Yellow Fever was reported this year.

(ii) **Anthrax**

39 cases with 1 death were reported this year, out of which 29 cases were reported from Kassala Province.

(iii) **Cerebro Spinal Meningitis**

927 cases with 102 deaths were reported during the year as compared with 1559 cases and 137 deaths last year.

TABLE 13  
*Cerebro-Spinal Meningitis Recorded Incidence  
and Fatality by Provinces*

PROVINCE				Cases	Deaths	Fatality Rate
Bahr El Ghazal	...	..	..	43	10	23.3
Blue Nile	..	..	..	598	43	7.2
Darfur	..	..	..	53	3	5.7
Equatoria	..	..	..	50	9	18.0
Kassala	..	..	..	39	11	28.2
Khartoum	..	..	..	75	11	14.7
Kordofan	..	..	..	47	11	23.4
Northern	..	..	..	9	3	33.3
Upper Nile	..	..	..	13	1	7.7
TOTAL	..	..		927	102	11.0

TABLE 14

*Cerebro-Spinal Meningitis*

*Recorded Incidence and Fatality in Ten Years*

YEAR						Cases	Deaths	Fatality Rate
1954/55	..	..	..	..	..	3,470	492	14.2
1955/56	..	..	..	..	..	9,028	828	9.2
1956/57	..	..	..	..	..	5,888	578	9.8
1957/58	..	..	..	..	..	2,008	178	8.9
1958/59	..	..	..	..	..	1,170	208	17.6
1959/60	..	..	..	..	..	1,459	181	12.4
1960/61	..	..	..	..	..	7,837	461	5.9
1961/62	..	..	..	..	..	5,902	431	7.3
1962/63	..	..	..	..	..	1,559	137	8.8
1963/64	..	..	..	..	..	927	102	11.0

v) Diphtheria

1,501 cases with 49 deaths were reported this year as compared with 658 cases and 46 deaths last year.

TABLE 15

*Diphtheria Recorded Incidence and Fatality by Provinces*

1963/1964

Province						Cases	Deaths	Fatality Rate
Bahr El Ghazal	..	..	..	..	..	8	1	12.5
Blue Nile	..	..	..	..	..	247	27	10.9
Darfur	..	..	..	..	..	15	—	—
Equatoria	..	..	..	..	..	11	2	18.2
Kassala	..	..	..	..	..	44	6	13.6
Khartoum	..	..	..	..	..	1,046	1	0.1
Kordofan	..	..	..	..	..	78	6	8.0
Northern	..	..	..	..	..	16	1	6.3
Upper Nile	..	..	..	..	..	36	5	13.9
TOTAL	..	..	..	..	..	1,501	49	3.3

TABLE 16

*Diphtheria Recorded Incidence and Fatality in Ten Years*

YEAR	Cases	Deaths	Fatality Rate
1954/55 .. .. .	369	61	16.5
1955/56 .. .. .	356	38	10.7
1956/57 .. .. .	1,497	52	3.5
1957/58 .. .. .	506	38	7.5
1958/59 .. .. .	859	52	6.1
1959/60 .. .. .	940	91	10.3
1960/61 .. .. .	691	48	6.9
1961/62 .. .. .	1,078	83	7.7
1962/63 .. .. .	658	46	7.0
1963/64 .. .. .	1,501	49	3.3

**(v) Dysentery**

6,416 cases were treated in hospitals as in-patients and 316,975 cases as out-patients.

**(vi) Enteric Fever**

2,426 cases with 158 deaths were reported during the year.

TABLE 17

*Enteric Fever Province Distribution 1963/64*

PROVINCE	Cases	Deaths
Bahr El Ghazal .. .. .	9	—
Blue Nile .. .. .	756	6
Darfur .. .. .	904	135
Equatoria .. .. .	3	1
Kassala .. .. .	114	3
Khartoum .. .. .	452	8
Kordofan .. .. .	25	—
Northern .. .. .	110	3
Upper Nile .. .. .	53	2
TOTAL ..	2,426	158



TABLE 18  
*Enteric Fever Recorded Incidence in Ten Years*

YEAR							Cases	Deaths
1954/55	..	..	..	..	..	..	548	34
1955/56	..	..	..	..	..	..	449	23
1956/57	..	..	..	..	..	..	410	31
1957/58	..	..	..	..	..	..	361	32
1958/59	..	..	..	..	..	..	687	19
1959/60	..	..	..	..	..	..	763	35
1960/61	..	..	..	..	..	..	578	14
1961/62	..	..	..	..	..	..	1,171	52
1962/63	..	..	..	..	..	..	1,144	25
1963/64	..	..	..	..	..	..	2,426	158

**(vii) Gastro-Enteritis of Children**

Records of Hospitals and Dispensaries registered 312,032 cases of which 8,159 required hospitalization with 753 deaths (a fatality rate of 9.1 per cent of the total admissions).

**(viii) Leprosy**

During the year 458 new cases were diagnosed bacteriologically positive of which 350 cases were distributed between Equatoria and Bahr El Ghazal Provinces.

**(ix) Poliomyelities**

250 cases were reported this year of which 124 received hospital treatment with 3 deaths. Last year 243 cases with 4 deaths were reported.

**(x) Hydrophobia**

18 cases of human rabies were admitted to hospitals this year.

**(xi) Small-Pox**

No case of Small-Pox was reported this year compared with 95 cases with no death last year.

The country-wide vaccination campaign against Small-Pox which started in December, 1962, assisted by the World Health Organization, was continued during the year. The Provinces covered and vaccinations performed during the year were as follows :—

Blue Nile (Northern Division)—(December, 1963—March, 1964)	..	..	..	..	..	..	..	1,030,500
Khartoum—(June, 1964)	..	..	..	..	..	..	..	745,095
Northern—(October, 1963—March, 1964)	..	..	..	..	..	..	..	661,074
Kassala (Southern)—(Feb., 1964—May, 1964)	..	..	..	..	..	..	..	434,363
Kassala (Red Sea Area)—(Oct., 1963—March, 1964)	..	..	..	..	..	..	..	349,922
TOTAL	..	..	..	..	..	..	..	3,220,954

TABLE 19

*Small Pox Incidence and Vaccinations Performed  
in Ten Years*

Year							Cases	Vaccinations
1954/55	..	..	..	..	..	..	4,200	1,203,673
1955/56	..	..	..	..	..	..	1,427	1,748,190
1956/57	..	..	..	..	..	..	25	648,501
1957/58	..	..	..	..	..	..	295	2,678,223
1958/59	..	..	..	..	..	..	380	2,440,084
1959/60	..	..	..	..	..	..	336	633,275
1960/61	..	..	..	..	..	..	162	1,830,156
1961/62	..	..	..	..	..	..	8	3,418,539
1962/63	..	..	..	..	..	..	95	5,991,435
1963/64	..	..	..	..	..	..	—	3,220,954

**(xii) Influenza**

98,996 cases with 8 deaths were reported during the year compared with 82,033 cases and 22 deaths last year.

**(xiii) Tuberculosis**

During the year routine testing and vaccination in the Provincial Permanent Centres continued.

The numbers tested and vaccinated in these centres totalled respectively 273,904 and 154,891.

The mass-scale operations continued in the Blue Nile Province and Wadi Halfa District.

Following is a table of tests and vaccinations performed during the year:—

**BCG WORK ANNUAL REPORT**  
**JULY, 1963 - JUNE, 1964 BY ALL CENTRES**

CENTRES		No. Tested	No. Positive	No. Vaccinated	No. not Vaccinated	Not Read
H.Q. Team	.. .. .	166,829	28,839	100,143	1,460	36,387
Medani T.B. Centre	.. .. .	6,027	2,968	1,774	796	489
El Obeid Centre	.. .. .	36,531	12,388	19,735	68	4,340
Port Sudan Centre	.. .. .	1,991	962	838	49	142
Wau Centre	.. .. .	17,551	7,393	8,109	51	1,998
Wadi Halfa Team	.. .. .	15,870	4,235	9,592	96	1,947
Juba Centre	.. .. .	3,206	1,204	1,693	13	296
Kassala Centre	.. .. .	6,727	1,561	4,726	95	345
Thawra Centre	.. .. .	9,550	2,791	690	4,334	1,735
El Fasher	.. .. .	9,622	1,460	7,591	54	517
<b>TOTAL</b>		<b>273,904</b>	<b>63,801</b>	<b>154,891</b>	<b>7,016</b>	<b>48,196</b>



TABLE 20  
*Tuberculosis Province Distribution of Admissions  
to Hospitals—1963/64*

PROVINCE	Pulmonary	Non-Pulmonary	Total
Bahr El Ghazal .. ..	288	127	415
Blue Nile .. ..	1,060	381	1,441
Darfur .. ..	279	70	349
Equatoria .. ..	228	41	269
Kassala .. ..	713	250	963
Khartoum .. ..	920	181	1,101
Kordofan .. ..	415	117	532
Northern .. ..	265	49	314
Upper Nile .. ..	451	174	625
<b>TOTAL ..</b>	<b>4,619</b>	<b>1,390</b>	<b>6,009</b>

TABLE 21  
*Tuberculosis Admission of Hospitals in the Ten Years*

YEAR	Pulmonary	Non-Pulmonary	Total
1954/55 .. ..	2,868	915	3,783
1955/56 .. ..	2,697	823	3,520
1956/57 .. ..	3,175	1,005	4,180
1957/58 .. ..	3,749	1,061	4,810
1958/59 .. ..	3,864	1,135	4,999
1959/60 .. ..	4,263	1,297	5,560
1960/61 .. ..	4,402	1,310	5,712
1961/62 .. ..	4,461	1,180	5,641
1962/63 .. ..	4,376	1,525	5,901
1963/64 .. ..	4,619	1,390	6,009



TABLE 22

*Tuberculosis Age Distribution of 5690 Cases of the Cases Admitted to Hospitals 1963/1964—No. of Persons and Percentages*

	AGE GROUPS IN YEARS								TOTAL
	0-1	2-5	6-15	16-25	26-35	36-45	46-65	OVER 65	UNDE-FINED
TUBERCULOSIS .. ..									
CASES PULMONARY ..	7	32	205	710	1330	1236	698	234	4
PERCENTAGE .. ..	0.2	0.7	4.6	15.9	29.8	27.7	15.7	5.3	0.1
CASES NON-PULMONARY	15	35	135	284	266	221	197	72	9
PERCENTAGE .. ..	1.2	2.8	10.9	23.1	21.6	17.9	16.0	5.8	0.7
									100

TABLE 23

*Tuberculosis Site of Main Lesion in 1316 of the Non-Pulmonary Cases  
Admitted to Hospitals 1963/64*

SITE OF MAIN LESION						Cases	Percentage
Gland	..	..	..	..	..	478	36.3
Bone ..	..	..	..	..	..	424	32.2
Joint	..	..	..	..	..	237	18.0
Abdominal	..	..	..	..	..	130	9.9
Skin	..	..	..	..	..	29	2.2
Genito-Urinary	..	..	..	..	..	17	1.3
Meningeal	..	..	..	..	..	1	0.1
TOTAL ..						1,316	100.0

TABLE 24

*Tuberculosis Province Distribution of all Cases Diagnosed  
1963/64*

PROVINCE				Pulmonary	Non-Pulmonary	Total
Bahr El Ghazal	..	..	..	616	462	1,078
Blue Nile	..	..	..	1,253	1,318	2,571
Darfur ..	..	..	..	467	119	586
Equatoria	..	..	..	228	126	354
Kassala	..	..	..	1,159	1,360	2,519
Khartoum	..	..	..	1,312	2,073	3,385
Kordofan	..	..	..	2,046	324	2,370
Northern	..	..	..	628	178	806
Upper Nile	..	..	..	926	1,326	2,252
TOTAL .. ..				8,635	7,286	15,921

### 3. HELMENTHIC DISEASES

#### (i) Anklystomiasis

16,785 cases were recorded this year, of which 14,628 were reported from the Southern Provinces.

#### (ii) Dracontiasis

4,345 cases were treated during the year, of these 3,722 were reported from the Southern Provinces.

#### (iii) Bilharzia—(Schistosomiasis)

67,556 cases were recorded during the year.

The Snail Control continued on the same lines as before *i.e.* mechanical trapping chemical traps and regular inspections in search of snails.

TABLE 25

*Bilharzia in Gezira Irrigated Area 1958/59 to 1962/63*

Y E A R	H A E M A T O B I U M						M A N S O N I					
	C H I L D R E N			A D U L T S			C H I L D R E N			A D U L T S		
	Ex- amined	Found Infected	Ex. amined	Found Infected	Ex. amined	Found Infected	Ex- amined	Found Infected	Ex- amined	Found Infected	Ex- amined	Found Infected
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1959/60 .. ..	61,314	1,306	84,678	1,459	84,678	1,459	61,314	2,892	84,678	4,209	84,678	5.0
1960/61 .. ..	69,589	956	97,798	1,190	97,798	1,190	69,589	3,201	97,798	4,583	97,798	4.7
1961/62 .. ..	69,497	1,035	110,177	1,330	110,177	1,330	69,497	2,942	110,177	5,035	110,177	4.6
1962/63 .. ..	101,215	1,075	150,825	2,124	150,825	2,124	101,215	4,315	150,825	8,237	150,825	5.5
1963/64 .. ..	80,167	1,158	138,557	4,830	138,557	4,830	80,167	3,998	138,557	9,617	138,557	6.9



TABLE 26  
*Bilharzia Province Distribution 1963/64*

PROVINCE	Cases	Deaths
Bahr El Ghazal .. .. .	909	—
Blue Nile .. .. .	23,058	12
Darfur .. .. .	16,294	2
Equatoria .. .. .	4,120	8
Kassala .. .. .	1,432	2
Khartoum .. .. .	7,229	5
Kordofan .. .. .	9,197	1
Northern .. .. .	3,579	2
Upper Nile .. .. .	1,738	2
TOTAL ..	67,556	34

TABLE 27  
*Bilharzia Incidence in Ten Years*

YEAR	Cases
1954/55 .. .. .	37,570
1955/56 .. .. .	31,741
1956/57 .. .. .	43,863
1957/58 .. .. .	41,645
1958/59 .. .. .	45,094
1959/60 .. .. .	47,345
1960/61 .. .. .	52,877
1961/62 .. .. .	57,218
1962/63 .. .. .	55,927
1963/64 .. .. .	67,556

### (E) SANITARY CIRCUMSTANCES

#### Water Supplies

Improvement of town and rural water supply continues. Controlled water yards and protected Haffirs and deep bore wells for rural and nomadic areas are expanding.

#### Refuse Disposal

Mainly in towns, this is being carried out by orthodox methods of daily collection, dumping, and burning.

#### Sewage Disposal

The sewage works in Khartoum Town are gradually replacing the bucket system. It has not yet covered the whole town.

In other towns bucket system, aqua-privy, septic tank and pit latrine are in use.

#### Housing and Town Planning

The usual measures to ensure good housing and avoid over-crowding and insanitary conditions are being taken by the authorities concerned in re-planning town expansion and new layouts.

## CHAPTER IV

### SOCIAL HYGIENE

#### Midwifery

The following Table shows the midwifery Training Schools, date of foundation of each School, total number of midwives trained and number under training during 1963/64 :—

TABLE 28

#### *Midwifery Training Schools*

SCHOOLS				Date of Opening	Total Midwives Trained Since Opening	No. of Midwives Under Training 1963/64
Omdurman	..	..	..	1920	1,080	28
El Obeid	..	..	..	1948	152	18
Juba	..	..	..	1950	74	9
Malakal	..	..	..	1952	63	13
Wad Medani	..	..	..	1953	157	22
Atbara	..	..	..	1955	107	21
Kassala	..	..	..	1957	46	12
El Fasher	..	..	..	1958	38	12
Khartoum North	..	..	..	1963	—	20
TOTAL					1,717	155

TABLE 29

*Distribution of Trained Midwives in the Sudan*

PROVINCE	District Midwives	Certificated Nurse Midwives	Staff Midwives	Staff Nurses	Health Visitors	Supt. Midwives Schools	Supt. Nursing Officers	Matrons and Asst. Matrons	S. Midwives H. Visitors and Administrators under Training	Un-Certificated Nurse Midwives
Bahr El Ghazal	15	—	—	—	—	—	—	—	—	1
Blue Nile	259	13	5	5	11	1	2	2	4	4
Darfur	72	5	3	—	3	1	1	1	4	1
Equatoria	25	2	1	—	1	1	1	1	—	22
Kassala	79	4	—	3	5	—	1	1	4	2
Khartoum	195	35	14	8	12	3	1	2	10	—
Kordofan	182	9	4	6	3	1	1	—	7	4
Northern	211	8	3	2	6	1	1	—	5	2
Upper Nile	49	—	2	—	1	1	—	1	—	8
TOTAL	1,087	76	32	24	42	9	8	8	34	44



TABLE 30

*New Midwifery Certificates Issued During 1963/64*

PROVINCE	Certificated Nurse Midwives	Village Midwives	Total
Bahr El Ghazal .. ..	—	—	—
Blue Nile .. ..	4	22	26
Darfur .. ..	3	10	13
Equatoria .. ..	—	10	10
Kassala .. ..	2	12	14
Khartoum .. ..	7	14	21
Kordofan .. ..	4	18	22
Northern .. ..	2	14	16
Upper Nile .. ..	—	10	10
<b>TOTAL ..</b>	<b>22</b>	<b>110</b>	<b>132</b>

**Health Visitors School-Omdurman**

Although the School was only opened in November, 1959, the training of Health Visitors actually began in 1947.

Fifty-three Health Visitors were trained between 1947 and 1959 of whom two have died, two retired, two resigned, and two discharged.

In 1957 the course was extended from nine months to one year, and designed in order to combine the training of Health Visitors and Staff Midwives.

Thirty-six Health Visitors/Staff Midwives have been trained since 1959 bringing the total to eighty-nine, of whom eighty-one are working as follows:—

- 1 Principal Matron.
- 7 Superintendant Nursing Officers.
- 9 Superintendants of Midwives Schools.
- 64 Staff Midwives/Health Visitors.

Twenty-two Health Visitors/Staff Midwives graduated during the period 1963/64 and twenty-three are at present under training.

**Maternal and Child Health**

Maternal and Child Health Services continue to improve. Three Health Visitors were posted to the Halfa Resettlement Area in Khashm El Girba where six new centres are now functioning.

UNICEF is assisting in this service by provision of necessary equipment and books for training and supply of milk and vitamins for use in the centres. All centres were assisted in this manner during the year.

Following list shows localities where health centres are operating:—

## HEALTH CENTRES

### Khartoum Province

1. Khartoum Central
2. Goz
3. Khartoum North
4. Hay El Arab
5. Wad Nubawi
6. El Fitteihab
7. Kober
8. Halfayat El Mulouk
9. Maigoma
10. Saggana
11. Mogren
12. Tuti
13. Higra
14. Banat
15. Shaggara
16. Burri
17. Wad Ramli
18. Shambat
19. Morada

### Blue Nile Province

20. Wad Medani (a)
21. Dueim
22. Hassaheissa
23. Kosti
24. Singa
25. El Hosh
26. El Roseires
27. Wad Medani (Police)
28. Wad Medani (b)
29. Rufaa

### Darfur Province

30. El Fasher
31. El Geneina
32. Nyala

### Equatoria Province

33. Juba

### Kassala Province

34. Kassala
35. Aroma
36. Port Sudan (East)
37. Port Sudan (West)
38. Deim Shatti (Port Sudan)
39. Deim Arab (Port Sudan)
40. Tokar
41. New Halfa
42. Degheim
43. Sarras
44. Debeira
45. Akasha
46. Argin

### Kordofan Province

47. El Obeid
48. El Nahud
49. Fellata (El Obeid)
50. Wad Ellias

### Northern Province

51. Atbara
52. Damer
53. Shendi
54. Tangassi
55. Dongola

### Upper Nile Province

56. Malakal

The following are ante-natal clinic where, due to shortage of Health Visitors and other trained staff, only ante-natal work is carried out:—

Wau	Torit	Berber
Kowjok	Li-Rangu	Merowe
Rumbeik	Yei	Delgo
Aeil	Maridi	Zeidab
Tonj	Kapoeta	Dongola
Sennar	Sinkat	Wadi Halfa
Bakht El Ruda	Gedaref	Abri
Abu Usher	Abu Deleig	El Dakhla
Managil	Um Ruaba	Darmali
Kurmuk	Kadugli	Fangok
Tendelti	Talodi	Bentui
Nyala	Heiban	Bor
Zalingei	Abu Gebeiha	Renk
Burram	Rigl El Fula	Nasir
Lui	Dilling	
Mondri	Bara	
Sources Yubu		



TABLE 31

*Activities of Maternity and Child Welfare Centres and Ante-Natal Clinics  
throughout the Sudan for the Year 1963/64*

PROVINCE	No. of Clinics M.C.W. & Ante- Natal	Ante- Natal Attend- in all Clinics	No. of Home Visits	No. of Health Centres	Child Attend- ances in M.C.W. Centres	No. of Deliveries By Trained Midwives
Bahr El Ghazal ..	5	6,250	—	—	—	336
Blue Nile .. ..	16	80,203	5,091	10	30,979	4,267
Darfur .. ..	6	13,936	2,766	3	9,903	1,764
Equatoria .. ..	9	8,953	154	1	3,113	393
Kassala .. ..	15	23,957	1,983	13	8,298	4,138
Khartoum .. ..	20	96,180	1,428	19	66,151	15,700
Kordofan .. ..	12	14,812	574	4	7,015	360
Northern .. ..	14	15,793	2,707	5	11,666	595
Upper Nile .. ..	6	3,278	54	1	3,806	238
TOTAL ..	103	263,362	14,757	56	140,931	27,791

## MEDICAL EXAMINATION OF SCHOOL CHILDREN

### School Medical Service

The following Table summaries the result of Medical Examination of School Children in the Provinces :—



TABLE 32

*Medical Examination of School Children—1963/64*

PROVINCE	No. of Children Examined	NO. OF CASES FOUND					
		Trachoma	Bilharzia	Enlarged Spleen	Pulmonary T.B.	Ancylostoma	All Other Diseases
Bahr El Ghazal ..	732	—	82	39	—	130	109
Blue Nile ..	24,615	1,515	834	351	—	77	41
Darfur ..	7,896	1,458	806	640	—	—	175
Equatoria ..	6,378	260	309	841	—	609	—
Kassala ..	24,640	1,342	157	275	—	—	158
Khartoum ..	4,914	324	—	3	—	—	—
Kordofan ..	12,776	196	323	104	—	1	—
Northern ..	32,644	5,276	459	67	—	112	2,357
Upper Nile ..	560	1	15	—	—	—	—
TOTAL ..	115,155	10,372	2,985	2,320	—	929	2,840
PERCENTAGE ..	100.0	9.0	2.6	2.0	—	0.8	2.5

## Mental Health

25,603 cases were seen during the year by the Psychiatrist at the Clinic for Nervous Disorders, Khartoum North; 13,692 were interviews for males and 11,911 interviews for females. 3,606 were new patients and the balance representing the return attendances.

The number of medico-legal cases interviewed at Kober Institute was 585.

Table 33 shows categories of Diseases in Mental Cases.

The Mental Diseases Board saw 16 cases during the year. The findings of the Board were as follows:

- 3 Cases fit for Government Service.
- 7 cases unfit for Government Service.
- 6 cases fit for temporary service or referred for treatment and to re-appear before the Board at specified dates.

TABLE 33  
*Categories of Diseases in 25,603 Mental cases*

MONTH	Schizoph- rinic Reaction	Mania	Dep- ression	Manic/ Dep. Pycosis	Anxiety Reaction	Hys- teria	Eplipsy	Head- ache	Psych osom- atic	Mis- Groups	Total
June/July, 1963 ..	622	40	847	58	625	57	232	235	131	387	3,234
July/August ..	534	50	789	57	511	55	182	126	232	348	2,884
August/Sept., 1963 ..	508	31	689	52	481	50	184	99	226	276	2,596
September/Oct., 1963 ..	492	28	660	46	477	47	180	84	213	266	2,493
October/Nov., 1963 ..	502	26	662	49	467	51	179	92	222	258	2,508
November/Dec., 1963 ..	466	18	587	39	395	44	161	88	193	173	2,164
December/Jan., 1964 ..	411	19	534	34	313	30	117	77	163	131	1,829
January/Feb., 1964 ..	474	21	548	41	325	36	124	81	170	124	1,944
February/March, 1964 ..	404	20	525	29	303	32	113	172	150	163	1,911
March/April, 1964 ..	307	16	491	13	280	21	95	53	142	103	1,521
April/May, 1964 ..	203	19	172	13	377	14	81	51	87	38	1,055
May/June, 1964 ..	291	15	468	11	246	20	93	49	140	131	1,464
TOTAL ..	5,214	303	6,972	442	4,800	457	1,741	1,207	20,69	2,398	25,603



**Health Education**

The weekly Radio talks and Health Exhibition during tribal gatherings and agricultural shows, and press articles remained to be the media and methods for Health Education.

The audio visual aid unit in Khartoum continued its activities and is attempting to produce local films, film strips, photos, posters and models on the local health problems of the country.

**CHAPTER V**  
**PORT HEALTH QUARANTINE**

Sea and Airports remained clear of infection during the year.  
Disinfection were undertaken at Wadi Halfa, Port Sudan, Kassala, Khartoum, Juba, Malakal, Gencina, El Fasher and El Obcid.

The Aedic Index was calculated on an inspection of all habitations within the area concerned. The following table shows the aedic index throughout the year at the local airport on the international routes:—

TABLE 34  
*Ardes Aegypti Index 1963/64*

MONTH	Fasher	Juba	Kassala	Port Sudan	Khar-toum	El Obeid	Wadi Halfa	Malakal
July .. ..	0	0	0	0	0	0	0	0
August .. ..	0	0	0	0	0	0	0	0
September .. ..	0	0	0	0	0	0	0	0
October .. ..	0	0	0	0	0	0	0	0
November .. ..	0	0	0	0	0	0	0	0
December .. ..	0	0	0	0	0	0	0	0
January .. ..	0	0	0	0	0	0	0	0
February .. ..	0	0	0	0	0	0	0	0
March .. ..	0	0	0	0	0	0	0	0
April .. ..	0	0	0	0	0	0	0	0
May .. ..	0	0	0	0	0	0	0	0
June .. ..	0	0	0	0	0	0	0	0

### Port Sudan Quarantine

Total ships inspected were 1197. An increasing number of ships has been asking for Radio Pratique.

### Suakin Quarantine

14,975 Sudanese pilgrims left for Jeddah this year; 8707 of whom left by air from Port Sudan and 6268 left by sea from Suakin.

All out-going pilgrims were compulsorily immunised against Cholera, Small-Pox and Yellow Fever.

The pilgrimage was declared by Saudi Arabia Kingdom as free from epidemic and quarantinable diseases.

### Khartoum North Pilgrimage Transit Camp

3309 pilgrims passed through the camp during the year and have received the necessary inoculations against Cholera and Yellow-Fever and vaccinated against Small-Pox before their departure.

### Medical Mission to Hedjaz

The Medical Mission consisted of three Doctors (two from Ministry of Health and one from Medical Corps), four Medical Assistants, one Store-Keeper, one Laboratory Assistant, 13 Nurses and Midwives and two other auxiliary staff.

Treatment Centres were established at Jeddah, Mecca, Medina, Muna and Arafat. Medical Care and attention were given to all pilgrims and local inhabitants who sought for them. 23,097 patients were attended to.



## **Wadi Halfa Quarantine**

Examination of labourers coming from United Arab Republic was carried out before their entry into the Sudan.

311 river vessels and 332 aircrafts were inspected during the year. 16,650 vaccinations against Small-Pox were done in the quarantine. The total number of persons who passed through Wadi Halfa Quarantine was 28,543.

## **Geneina Quarantine**

13,227 persons passed through El Geneina Quarantine. 9,590 vaccinations against Small-Pox were done in El Geneina Quarantine.

# **CHAPTER VI**

## **MEDICAL TRAINING**

### **School of Hygiene**

20 students were under training in the First Class.

Basic education requirements for entry into the School is completion of Secondary Education. The students take a three years course at the end of which they must pass the Royal Society of Health Examination.

In their first year of study the students are given General Science, Building Science, Drawing and Construction Technology, Levelling and Geometry in the Khartoum Technical Institute.

During the school vacation, the students receive a further practical rural tuition in the Provinces.

### **Medical Assistants Training School**

38 Medical Assistants graduated from the School this year.

A new batch of 49 students were accepted in the School.

### **Training of Nurses**

42 Hospitals are now recognised as Local Training Centres for hospital nurses.

556 nurses sat for the Nursing Examination this year. 446 successfully passed the Examination; of these 356 were males and 90 were females.

### **Laboratory Technicians and Assistants**

No new technician trainees joined the Stack Medical Research Laboratories, but four trainees completed their training successfully.

Two Laboratory Technicians returned from their study courses abroad, one of them after doing one year's training in Bacteriology in Glasgow and the other, one and a half year in Beirut in Medical Laboratory Technology.

Eleven Laboratory Assistants were trained during the year.

Three Yemenite candidates came for training in the Research Laboratories at the request of the World Health Organization.

The police cadets from the Police College Khartoum attended a course of lectures and practical training in Forensic Medicine. A total of 16 lectures were given.



## **Dispensers Training School**

The curriculum of the course includes recapitulation of Basic Science, *i.e.*, Elementary Chemistry, Elementary Physics and Biology. Stress is made on Practical Dispensing and Pharmaceutics.

The total number of Students in the School at present is 5.

## **Training of Radiographers**

6 candidates were taken for training in 1963/64.

The School of Radiology gives a course of Training for two years for candidates of School Certificate level.

Theoretical teaching is given in Electricity, Photography, Anatomy, Nursing as well as in Radiographic methods and practice. All allied fields of study are dealt with according to their degrees in connection with Radiography.

Practical Radiography, Dark Room Practice and the practical handling of machines, X-Ray hazards and all allied subjects are dealt with.

## **Eye Hospital—Khartoum**

Students for the School had been selected from the Certificated Mumarids (Rais Anbar or Wakil Rais Anbar Status) The duration for study in the School is two years. The students have studies in Eye Disease, Elementary Anatomy and Physiology, and Diseases which have an effect on the eye.

So far 32 Ophthalmic Assistants were graduated.

9 students are at present in the School.

## **Training of other Staff**

The School Training of Higher Nurses is mentioned under the World Health Organization Assisted Projects.

The Training of Midwives and Health Visitors is mentioned under the Chapter of Social Hygiene.



CHAPTER VII  
EXISTING HOSPITALS, DISPENSARIES AND DRESSING STATIONS  
AVAILABLE 1963/64

TABLE 34

PROVINCE	Hospital (69)	BEDS IN HOSPITALS					Dispen- saries	Beds in Dispen- saries	Total Beds in Hospitals and Disp.	Dressing Stations	Popula- tion	Beds per 1,000 Popu- lation in Hospitals and Disps.
		General	T.B.	Child- ren	Mater- nity	Total						
ahr El Ghazal	Wau .. ..	204	86	8	9	307 )	17	113	771	50	1,328,000	0.58
	Rumbeik .. ..	111	48	—	4	163 )						
	Aweil .. ..	108	—	—	—	108 )						
	Raga .. ..	40	—	—	—	40 )						
	Tonj .. ..	40	—	—	—	40 )						
		503	134	8	13	658						
Blue Nile	Wad Medani .. ..	354	120	69	58	601 )	155	120	2,145	172	2,654,000	0.81
	Rufaa .. ..	100	24	—	—	124 )						
	El Dueim .. ..	98	16	—	26	140 )						
	El Geteina .. ..	60	—	6	6	72 )						
	Abu Usher .. ..	180	40	—	14	234 )						
	El Huda .. ..	12	—	4	4	20 )						
	El Managil .. ..	60	—	—	—	60 )						
	El Hassaheissa .. ..	60	—	—	—	60 )						
	Sennar .. ..	156	—	—	—	156 )						
	Singa .. ..	132	54	—	10	196 )						
	Kosti .. ..	152	—	—	16	168 )						
	El Roseries .. ..	102	—	—	8	110 )						
	El Kurmuk .. ..	84	—	—	—	84 )						
		1,550	254	79	142	2,025						
Darfur	El Fasher .. ..	178	12	12	44	246 )	49	448	1,113	40	1,669,000	0.67
	Nyala .. ..	100	—	—	16	116 )						
	El Geneina .. ..	88	12	—	—	100 )						
	Zalingei .. ..	71	4	—	—	75 )						
	El Daein .. ..	68	—	—	—	68 )						
	Buram .. ..	56	4	—	—	60 )						
		561	32	12	60	665						
Equatoria	Juba .. ..	256	71	37	25	389 )	41	431	1,589	51	1,140,000	1.39
	Lui .. ..	45	8	3	4	60 )						
	Maridi .. ..	101	19	—	9	129 )						
	Li-Rangu .. ..	106	20	—	10	136 )						
	Sources Yubu .. ..	115	—	—	6	121 )						
	Yei .. ..	102	—	—	1	103 )						
	Torit .. ..	122	11	—	1	134 )						
	Kapoeta .. ..	60	16	10	—	86 )						
		907	145	50	56	1,158						
Kassala	Kassala .. ..	251	48	20	20	339 )	51	207	1,374	71	1,246,000	1.10
	El Gedaref .. ..	187	32	12	9	240 )						
	Aroma .. ..	100	—	—	—	100 )						
	Port Sudan .. ..	252	68	21	14	355 )						
	Tokar .. ..	73	—	—	—	73 )						
	Sinkat .. ..	60	—	—	—	60 )						
		923	148	53	43	1,167						
Khartoum	Khartoum .. ..	737	—	144	50	931 )	33	51	2,193	23	650,000	3.37
	El Shaab ) .. ..	—	401	24	—	425 )						
	Abu Anga ) .. ..	—	—	60	—	352 )						
	Omdurman .. ..	292	—	42	20	238 )						
	Khartoum North .. ..	176	—	—	—	176 )						
	Eye Hospital .. ..	118	—	—	—	118 )						
	Abu Deleig .. ..	40	—	—	—	40 )						
	Omd. Maternity .. ..	—	—	—	38	38 )						
	Hosp. .. ..	1,363	401	270	108	2,142						
Kordofan	El Obeid .. ..	274	60	25	25	384 )	70	693	1,795	76	2,256,000	.80
	Kadugli .. ..	129	8	—	3	140 )						
	Abu Gebeiha .. ..	96	—	16	—	112 )						
	El Dilling .. ..	88	5	3	—	96 )						
	Talodi .. ..	45	13	—	2	60 )						
	El Nahud .. ..	107	10	9	3	129 )						
	Rigl El Fula .. ..	44	—	—	2	46 )						
	Bara .. ..	39	—	—	1	40 )						
	Um Ruaba .. ..	84	—	3	8	95 )						
		906	96	56	44	1,102						
Northern	Athara .. ..	191	36	16	45	288 )	70	193	1,183	96	1,095,000	1.08
	Halfa .. ..	120	46	22	14	202 )						
	Shendi .. ..	54	—	8	6	68 )						
	Dongola .. ..	65	12	1	8	86 )						
	Berber .. ..	80	—	10	8	98 )						
	Merowe .. ..	68	7	8	—	83 )						
	Borgeig .. ..	40	—	10	10	60 )						
	Delge .. ..	50	—	15	10	75 )						
	Abu Hamad .. ..	52	—	—	8	60 )						
	El Zeidab .. ..	46	—	10	4	60 )						
		766	101	100	113	1,080						
Upper Nile	Malakal .. ..	213	75	24	16	328 )	43	251	935	30	1,142,000	0.82
	Bor .. ..	100	40	—	—	140 )						
	El Renk .. ..	68	28	—	4	100 )						
	Bentiu .. ..	100	6	—	10	116 )						
		481	149	24	30	684						
TOTAL .. ..		7,960	1,460	652	609	10,681	529	2,417	13,098	609	13,180,000	0.99

The ratio for Hospital Beds only is 0.81 per 1,000 population.





CHAPTER VIII  
ANNUAL REPORT 1963,64  
of the  
**STACK MEDICAL RESEARCH LABORATORIES**  
From the period from 1.7.63 to 30.6.1964

*By*  
DR. M. H. SATTI

This report covers the period from July 1st. 1963 to June 30th. 1964. during this period research has been carried out on Kala-azar. Jaundice, mainly infective hepatitis and an obscure encephalomyelitis known locally as "Weal disease." Summaries of these and other subjects will be found under the appropriate headings.

A great part of the time of the staff was spent on teaching the technicians, female nurses from the Khartoum Nursing College, Police Cadets and Laboratory Assistants.

Among visitors to the Laboratories were Sir Graham G. Wilson ex-director of the Public Health Laboratories of England and Wales and Professor Evans, Professor of Bacteriology in the London School of Tropical Medicines and Hygiene. Professor Hasselman of Erlangen and Professor A. Herlich of Munchen on W.H.O. small-pox advisory assignment. Sir Graham came to advise on the New Medical Research Institute.

The Director attended a meeting of the Scientific group on yellow fever in October, 1963 and a seminar and training courses on rabies in June, 1964, in Moscow U.S.S.R. and in Geneva.

### **Staff Changes**

Dr. Sayed H. Daoud returned from U.K. after obtaining the Ph.D. in pathology from the University of London. He was also elected a founder member in the newly formed College of pathologists. In June, 1964, Dr. Ahmed Mahmoud Abbas obtained his Diploma of Bacteriology from London. He is expected to return after doing a few weeks training in Colindale with Dr. Taler on Salmonellas.

Dr. Awad El Sid Mustafa joined the Laboratories as a Registrar. Two more B.Sc. students joined the Medical Zoology and Endemic diseases in the Laboratories. One is to train as an animal ecologist and the other as medical entomologist. This latter will join the Malaria section. Sayed Mohamed Hussein Hassan, the superintendent of the Laboratories retired after over thirty years service. Lab. technician. Sayed Ahmed Mustafa Salih's secondment to W.H.O. in Somalia has been extended for another year.

### **Education and Routine Activities**

No new technician trainees joined the Laboratories but four trainees completed their training successfully.

Lab. Technicians Bashir Mohd. Ahmed and Mudather Pabiker returned from study courses abroad, the former after doing one year's training in Bacteriology in Glasgow and the latter one and half year in Beirut. Mudather obtained a Certificate in Medical Laboratory Technology from school established jointly by W.H.O. and the Government of Lebanon.

Eleven Laboratory Assistants were trained during the year.

Three Yemmenite candidates came for training in these laboratories.

The police cadets from the Police College Khartoum attended a course of lectures and practical training in Forensic Medicine. A total of 16 lectures were given.

### Technician Class

Attempts were made to start a class of 20 technicians but results were so far abortive. There were only 4 technician trainees this year.

A summary of the routine work and research carried out during the year is appended to the report. The total number of examinations was 48,903 compared with 49,792 in the previous year.

### Forensic Medicine

The teaching of Forensic Medicine of both medical students and police cadets has been carried out by the director.

The requests for Medicolegal examinations by the police continues to increase and constitutes a wide coverage; from identification of herbs and native drugs to various toxicological and blood tests.

A provisional approval has been obtained to employ a whole time specialist and a technician. Both will be expatriates. Applications were examined and contacts are on the way to employ an expatriate to carry out the work as well as help in organizing the new department.

### Lymph Vaccine

4,997,400 doses of vaccine were made this year as compared to 1,334,900 last year.

A campaign of small-pox eradication is going on with freeze dried small-pox vaccine. This is a Russian made vaccine.

Freeze dried lymph vaccine has been made in these laboratories but owing to the inadequate accommodation as well as equipment and other facilities like inefficient air conditioning and the lack of dust proof quarters the bacterial count is high and the potency is somewhat low. The lack of sufficient number of trained personnel is another set-back.

Unless and until these difficulties are overcome, it will not be possible to make freeze dried lymph vaccine in these labs. Only wet vaccine has to continue to be produced in these Labs.

It is considered essential that the building of the vaccines and sera Institute should be seriously and urgently considered for next year, if we want be self-efficient from the point of view of vaccines and sera. When this Institute is in full operation it will effect considerable saving in hard currency (40,000—100,000 pounds sterling per annum).



**STACK MEDICAL RESEARCH LABORATORIES**  
**DEPARTMENT OF MORBID ANATOMY, HISTOPATHOLOGY AND FORENSIC**  
**MEDICINE**

*By*

E. H. DAOUD, D.M.S.. Ph.D.. M.C. Path

The specimen received during the period 1.7.1963—30.6.64, were 1462 including gynacological specimens. This figure is far less than the number of specimens tated in the previous report.

The following analysis, deals with specimens received during the period of 2.5.64 to 30.6.64, when I started work after my return from the U.K. This includes specimens received from Kartoum Hospital during the faculty of Medicine's summer vacation.

Total number of specimens received	..	..	..	367
Gynacological	..	..	..	138
Others	..	..	..	229

The number of specimens received in the same period last year is 447 which hows a decrease of 89.

**1. Gynacological**

(a) *Malignant*

Cervical	..	..	..	..	..	7
Ovarian	..	..	..	..	..	1
Chorion Carcinoma	..	..	..	..	..	1
TOTAL						9

(b) *Benign*

Vulval	..	..	..	..	..	4
Vaginal	..	..	..	..	..	1
Cervical	..	..	..	..	..	5
Uterine	..	..	..	..	..	8
Ovarian	..	..	..	..	..	6
TOTAL						24

**2. Endometrial Curettings**

Phase of cycle and Phase disturbance	..	..	85
Products of conception	..	..	11
TOTAL			96

*Note:* Most of the 85 specimens of endometrial curettings showd mild hyperplasia and phase disturbance.

**3. Infections**

Cervicitis	..	..	..	..	..	5
Miscellaneous	..	..	..	..	..	4
TOTAL						9
GRAND TOTAL						138



## Histological Classification of Malignant tumours in (1-a):

Squamous Cell Carcinoma Cervix	..	..	..	7
Ovarian Dysgermimoma	..	..	..	1
Chorion Carcinoma	..	..	..	1

## B. OTHER SITES :

### 1. Malignant

#### (a) *Anatomical* :

Cardiova-scular	..	..	..	..	..	2
Peritoneal (Excluding Digestive)	..	..	..	..	..	3
Digestive	..	..	..	..	..	7
Male Genitalia	..	..	..	..	..	3
Skin	..	..	..	..	..	10
Eye	..	..	..	..	..	3
Breast	..	..	..	..	..	11
Thyroid	..	..	..	..	..	1
Miscellaneous	..	..	..	..	..	7
TOTAL						47

#### (b) *Histological* :

Squamous Cell Carcinoma	..	..	..	..	14
Adeno-Carcinoma	..	..	..	..	14
Sarcoma	..	..	..	..	7
Lymphomas and Lympho Sarcoma	..	..	..	..	6
Seminoma	..	..	..	..	1
Intra epithelial (Carcinoma in Situ)	..	..	..	..	2
Secondaries	..	..	..	..	3

### Note :

#### Malignant Lymphoma of Burkitt

This tumour first described in some parts of Africa by Burkitt, has been also reported in the Sudan. Three cases have been sent during this period by Mr. Ismail Nabrie (F.R.C.S.) from Port Sudan further to his cases sent from Juba. Two other cases have been sent from El Fasher by Mr. Kamal Bushra (F.R.C.S.) It will be of interest to keep a look out for this tumour and do an on the-spot work on its extent and whether it is associated with viral infection born by special types of mosquitoes.

### 2. Benign tumours

### 3. Inflammatory

Tuberculosis	..	..	..	..	..	8
Maduramycosis	..	..	..	..	..	22
Hydatid	..	..	..	..	..	1
Lympho granuloma inguinale	..	..	..	..	..	1
granuloma inguinale	..	..	..	..	..	1
Non-specific	..	..	..	..	..	45
TOTAL						78

**Maduramycosis**

Geographical distribution of Maduramycosis within certain latitudes of the Sudan (North of lat. 14 degrees North), has been alluded to by some workers. It is important that this fact should be investigated and studied extensively as it may have an important bearing on the epidemic and therapeutic aspects of the disease.

**Cytology**

A start has been made in cytological diagnosis of malignant disease which mostly consisted of cervical smears from females with post-menopausal bleeding together with Sputa, pleural and peritoreal effusions.

It is felt that a clinic for screening of women by cervical smears when they attend antenatal, post-natal and gynacological clinics will be great of value in propylaxis of cancer of the female genital tract.

Screening by prostatic massage in all patients with prostatic enlargement has proved to be the most valuable single test for malignancy of the prostate and bladder. It is felt, therefore, that a technician full time should be sent to the U.K. to train in cytological technique and screening of slides to help establish these clinics.

**Rabies**

This department continues to do diagnosis examination for suspected rabies in brains of animals. The method used is the histological method staining by Leppine stain. Some work in conjunctions with Verterinery Research Sections is in progress to compare the suitability of different diagnostic methods for rabies including the Fluorescent anti-body technique. It is hoped that this work which is of great public health importance will find the necessary financial support to buy a cryostat and a deep-freeze.

**Medicolegal**

This laboratory continues to serve the whole country in medicolegal laboratory work. The work mostly consists of identification of blood stains, blood grouping and suspected seminal stains. The total number of medicolegal specimens in the period 1.7.63 ot 30.6.64 is 380.

**Post-Mortems**

Demand for consultation in post-mortems examination is still a burden on the department of pathology catering as it does to all the Three Towns. I suggest that a meeting of all the parties concerned should be convened to streamline the services until a more permanent arrangement is set up.

**Analysis of Medicolegal Specimens**

*Blood stains*

Positive for human blood	..	..	..	..	14
Negative for human blood	..	..	..	..	24
TOTAL					38

*Seminal stains*

Positive for semen	..	..	..	..	117
Negative for semen	..	..	..	..	225
TOTAL					342
GRAND TOTAL					380



# STACK MEDICAL RESEARCH LABORATORY

## PATHOLOGY DEPARTMENT

The pathologist report as follows :—

The number of specimens received in this department from 1st. July, 1963, till 13th. May, 1964, during my service in this department, in a very small increase on concerning on previous year. Also very small increase of malignant tumour.

Figures are as follows :—

1. TOTAL BIOPSY SPECIMENS/for above period	..	..	1,229
1. Total neoplastic disease of above number	..	..	475
benign tumour	..	..	259
malignant tumour	..	..	216
Analysis from above figures by groups are as follows :			
(i) Squamous carcinoma	..	..	83
(ii) Glandular carcinoma	..	..	39
(iii) Sarcoma	..	..	49
(iv) Lymphomas and vascular tumours	..	..	6
(v) Adamantioma and teratoid tumours	..	..	10
(vi) Melanoma and retinoblastoma	..	..	17
(vii) Secondaries and Undifferented tumours	..	..	12
	TOTAL	..	216

Analysis from above figures by anatomical locations are as follows :—

1. Lymphatic tract	..	..	6
2. Respiratory tract	..	..	11
3. Upper digestive tract	..	..	4
4. Lower digestive tract	..	..	3
5. Abdominal cavity	..	..	25
6. Unirary-male-genital	..	..	7
7. Urinary female-genital	..	..	49
8. Musculo-scelatal system and eyes	..	..	48
9. Special and endocrine glands	..	..	12
10. Organs non specified	..	..	51
	TOTAL	..	216

Total Gynecological pathology :

(a) Total gynecological specimens	..	..	350
(b) Total andometrial	..	..	120

Out of endometrial specimens they show endometrial phase disturbance associated with sterility or heavy bleeding in metropathia. In this above number include 8 specimens which show material of conception.



**II. Forensic Medicine-Medico-Legal Case :**

Total number for this year including my period of service are :

Total seminal specimens	..	..	..	..	380
Total Blood Specimens	..	..	..	..	38

Details see in group report.

**III. Post Mortem Examination :**

During the period of my service I had 13 post mortem including Khartoum and Omdurman Hospitals; of that 3 police case other 9 natural deaths.

**SPECIMEN EXAMINED FOR RABIES**  
**1.7.63 to 30.6.64**

MONTHS		Monkey		Dog		Cat		Goat		Donkey		Cow		Camel		Horse		Total	
		P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.
July	1963	..	..	2	15	—	1	—	1	—	3	—	—	—	—	—	—	2	20
August	"	..	..	3	17	—	2	—	2	—	2	—	—	—	—	—	—	3	23
September	"	..	..	—	15	—	3	—	1	—	2	—	—	—	—	—	—	—	22
October	"	..	..	1	15	—	1	—	5	—	—	—	—	—	—	—	—	2	22
November	"	..	..	1	16	—	3	—	—	—	—	—	—	—	—	—	—	3	20
December	"	..	..	2	25	—	2	—	1	—	3	—	—	—	—	—	—	2	31
January	1964	..	..	1	15	—	3	—	5	—	1	—	—	—	—	—	—	3	25
February	"	..	..	1	18	—	1	5	3	—	—	—	—	—	—	—	—	7	23
March	"	..	..	2	28	—	2	—	3	1	—	—	—	—	—	—	—	3	33
April	"	..	..	1	17	—	—	5	—	2	—	—	—	—	—	—	—	8	17
May	"	..	..	—	15	—	3	—	1	—	2	—	—	—	—	—	—	—	21
June	"	..	..	—	13	—	1	—	1	—	—	—	—	—	—	—	—	—	15
TOTAL		1	5	19	209	—	22	10	23	3	13	—	—	—	—	—	—	33	272
GRAND TOTAL		..	..																305

KAHN TEST 1963—1964

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr	May.	June	Total
Positive ..	109	112	78	83	57	63	53	69	74	59	64	43	864
Negative ..	989	1,131	875	903	730	642	703	663	393	793	757	730	9,309
TOTAL ..	1,098	1,243	953	986	787	705	756	732	467	852	821	773	10,173

WIDAL REACTION 1963—1964

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun	Total
T ..	23	31	36	29	43	38	43	38	53	67	62	54	517
A ..	5	2	3	2	3	4	7	7	9	11	10	7	70
B ..	9	11	7	4	4	6	13	4	14	17	17	10	116
M ..	1	—	—	—	6	2	1	9	—	3	2	—	24
Negative ..	425	441	445	326	296	333	367	310	592	571	566	512	5,184
TOTAL ..	463	485	491	361	352	383	431	368	668	669	657	583	5,911



# DISTRIBUTION OF UNDULANT FEVER DURING THE YEAR OF

1963—1964

Hospital								Cases
Medani	..	..	..	..	..	..	..	4
Khartoum	..	..	..	..	..	..	..	3
Kassala	..	..	..	..	..	..	..	3
Kosti	..	..	..	..	..	..	..	3
Malakal	..	..	..	..	..	..	..	2
C.M.S. Omdurman	..	..	..	..	..	..	..	2
Omdurman Hosp.	..	..	..	..	..	..	..	2
P. Sudan	..	..	..	..	..	..	..	1
Thawra	..	..	..	..	..	..	..	1
Sennar	..	..	..	..	..	..	..	1
Abu Usher	..	..	..	..	..	..	..	1
Atbara	..	..	..	..	..	..	..	1
TOTAL								24
								Cases

BLOOD CULTURES 1963—1964

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
T .. ..	15	18	21	13	31	26	17	13	23	29	13	11	230
A .. ..	7	4	6	4	19	15	10	4	3	11	3	5	91
B .. ..	3	2	4	2	1	7	4	—	5	4	—	11	43
M .. ..	—	—	—	—	—	—	—	—	—	—	—	—	—
O.O. .. ..	11	15	20	17	32	29	22	14	25	34	37	32	288
Strepts .. ..	2	1	1	3	3	5	6	1	4	2	1	3	32
Sterile .. ..	120	117	150	167	155	145	162	108	151	167	185	196	1,823
Cent .. ..	165	177	170	130	170	163	150	55	100	103	152	120	1,655
TOTAL ..	323	334	372	336	411	390	371	195	311	350	391	378	4,162

URINES 1963—1964

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
S Typh. ..	5	8	6	11	1	3	4	5	2	2	1	4	52
Para "A" ..	1	2	—	1	—	—	1	—	—	1	1	—	7
Para "B" ..	—	—	—	—	—	1	—	—	—	—	1	—	2
Ova ..	1	—	2	—	—	—	—	—	—	1	—	—	4
Negative ..	872	947	973	976	818	901	605	577	901	909	896	939	10,314
TOTAL ..	879	957	981	988	819	905	610	582	903	913	899	943	10,379



# FAECES 1963--1964

	July	Aug.	Sept.	Oct.	Nov	Dec.	Jan.	Feb.	Mar	Apr.	May	June	Total
Flexneri ..	2	5	5	3	3	2	1	3	1	3	—	1	29
Shiga ..	1	2	3	2	1	—	2	—	1	1	—	1	14
Schmitz ..	—	—	1	1	1	—	—	—	—	—	—	1	4
Senne ..	1	—	—	—	1	1	—	—	—	—	—	—	3
S. Typhi ..	8	12	14	16	3	5	8	12	3	3	2	6	92
Para. , A'' ..	1	2	4	5	—	1	2	—	1	2	3	1	22
Para. , B' ..	1	1	1	2	—	1	1	—	1	1	1	2	12
Anaeba ..	—	—	1	—	2	2	—	—	—	1	—	—	6
OV A ..	1	1	—	1	3	1	1	1	1	2	3	3	18
Negative ..	406	389	450	463	445	460	219	205	334	260	284	189	4,104
TOTAL ..	421	412	479	493	459	473	234	221	342	273	293	204	4,304

# BIOCHEMISTRY 1963--1964

SPECIMEN	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jan	Total
B. Sugar ..	106	88	98	113	190	103	97	24	112	101	139	136	1,307
B. urea ..	48	39	56	117	129	96	85	81	76	81	143	120	1,071
P. Proteins ..	27	20	19	37	40	51	31	22	27	31	31	42	378
S. Ak. Phos ..	21	24	17	23	22	32	22	18	23	19	19	27	267
S. Thymolt. ..	17	21	18	21	21	25	20	15	19	24	18	21	240
S. Bilirubin ..	21	12	28	30	26	38	27	19	29	35	34	39	338
S. Acid Phos ..	3	5	7	7	8	10	3	1	3	5	2	4	58
S. Sodium ..	1	3	2	3	2	3	1	1	4	3	2	5	29
S. Potassium ..	1	1	2	3	2	2	1	1	4	2	7	3	29
Ocult Blood ..	2	1	3	4	1	2	1	2	5	3	3	2	29
C.S.F. ..	3	2	9	9	5	7	6	9	9	13	1	11	84
Ascitic F. ..	1	2	2	1	2	1	1	3		2	7	1	23
F.T.M. ..	—	—	1	2	1	2	1	—	1	—	2	2	12
S. Cholesterol ..	3	—	7	11	8	12	13	9	14	15	20	13	125
Pleural F. ..	1	—	—	2	—	—	—	1	1	—	—	—	5
TOTAL (monthly)	255	218	269	383	457	384	309	205	327	334	428	426	3,995

VACCINES 1963—1964

Type o Vaccine	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
T.A.B. Vaccine ..	10,000	10,300	11,150	17,850	6,100	12,500	—	10 000	12,450	32,100	15,000	27,000	164,450 c.c.
S. Pox Vaccine ..	50,000	150,150	50,400	150	62,500	80,050	65,350	125,000	200,300	250	—	—	784,150des.
Chlera Vaccine ..	—	—	—	—	26,700	—	700	—	24,100	10,500	—	—	62 000 c.c.
Anti-Rabic .. ..	112,650	60,385	60,075	90,375	45,450	60,600	60,075	76,125	43,425	72,825	86,625	39,000	807,610c.c.



# MISCELLANEOUS 1963—1964

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	Apr.	May	June	Total
Swabs. ..	473	495	483	398	480	502	423	461	382	411	341	377	5,226
Haemaltology ..	35	30	22	23	27	19	28	34	33	30	29	25	335
Pos. ..	—	1	2	—	2	1	—	2	3	5	4	7	27
C.S.F. Neg. ..	9	12	13	11	17	13	12	16	17	22	23	31	196
TOTAL ..	9	13	15	11	19	14	12	18	20	27	27	38	223
Pes. ..	2	2	1	3	—	—	1	1	2	1	—	2	15
C. Diphth. Neg. ..	93	105	97	112	120	110	104	98	99	112	107	132	1,289
TOTAL ..	95	107	98	115	120	110	105	99	101	113	107	134	1,304
Sputa P.O.S. ..	4	7	5	6	5	3	7	3	4	5	6	9	64
Neg. ..	84	91	68	93	105	88	120	73	99	78	112	117	1,128
TOTAL ..	88	98	73	99	110	91	127	76	103	83	118	126	1,192

Names and Initials of Author	Date of Publication	Title of Article	Title of Journal in which Published	Volume of number of Journal	Page Number of Journal
M. H. Satti	December 1963	Cutaneous and Muco-Cutaneous Lesions in Kalazar	Sudan Medical Journal	Vol. II No. 4 (New Series)	p. 88-103
M. Qutbuddin	„	Fish, wild life and pesticides. The join planning and cooperation.	„	„	p. 104-107
E. H. Daoud	March 21, 1964	Human Breast Carcinoma exam- ined by the flourescent antibody technique	Nature	Vol. 201 No. 4925	P. 1235-1236

## ANNUAL REPORT OF THE MEDICAL ENTOMOLOGY SECTION FOR THE YEAR 1963/64

The work of the Section continued on the following lines :—

- (1) Collection was made by the Section of insects of medical interest with special reference to Anopheline and Culicine Mosquitoes, Sandflies and other Diptera.
- (2) Specimens thus collected and those sent to the Section from different parts of the country were identified and reports submitted to the Under Secretary, Ministry of Health with copies to the Director, Research and the P.M.O.H. of the Province concerned.
- (3) With the concurrence of the Under Secretary and Director Research a circular letter was issued to the P.M.O.H's and S.P.H.I. with the request to send to this Section as much collection of Medical insects as possible. Equipment for collection of insects was also supplied to these working in the field in the different Provinces whenever they asked for it.
- (4) Colonies of the yellow fever mosquito *Aedes aegypti* and *Musca* are being maintained in the laboratory as they are used for testing different insecticides.
- (5) Experiments on the susceptibility of *Phlebotomus* to various insecticides continued in the Section. The W.H.O. kit was used for these tests. A paper has been written on the results of the experiments which has been accepted for publication by the Sudan Medical Journal.
- (6) With a view to keeping in touch with the most recent developments in the field of research useful for control of vectors of human disease, contact has been maintained with the World Health Organization, Geneva that has been kind enough to supply the Section with material such as the various kits for test from time to time. More details are given in the following under the head "Irritability of Mosquitos to Insecticides."

### Culicidae

In all 21 species belonging to 5 Genera and 11 subgenera were recognised in the collections, of which 4 accounted for the genus *Anopheles*, 6 for, *Culex*, 9 belonged to *Aedes*, one to *Mansonia* and one to *Uranotaenia*. The anopheline subgenera were *Anopheles* and *Myzomyia*; the culicine were *Culex*, *Culiciomyia* and *Lutzia*; the aedine were *Stegomyia*, *Diceromyia*, *Aedimorphus*, *Neomelanoconion* and *Mucidus*, and *Mansonioides* was of the genus *Mansonia*.

In order to study the Anopheline fauna of Khashm el Girba with special reference to malaria transmission in the area a technical assistant was stationed there for a few months.

Biting females of *A. pharoensis* were daily collected at and around Medani for testing its susceptibility to DDT and other insecticides and to conduct irritability tests with the kit provided by the W.H.O.



## Phlebotomina

Phlebotomine sandflies were collected from Khashm el Girba, Roseires, Tozi and other places. A total number of 633 specimens were identified, in which ten species were recognised. *Phlebotomus papatasi* females were daily collected from Medani and around the town for tests on susceptibility of the fly to different insecticides as mentioned above.

## Chironomidae

In the report of the Section for 1962/63 it was mentioned that Dr. W. Wulker, the W.H.O. consultant visited the Sudan for a short period viz., about a month in connection with the 'nimitti.' The chief purpose of his visit was to obtain material and to report on the potentialities of biological control against nimitta and the feasibility of developing practical biological control procedures for integration and investigations at Medani, and taking part in some of his excursions and investigations at Medani, and having fully discussed various aspects of problems such as the:—

- (i) detection of any natural parasites in the adult or the early stages the midges
- (ii) the effect of the parasitization on the insect
- (iii) the host parasite specificity
- (iv) the method of rearing the parasites in large number in the laboratory; large enough to parasites the early stages to result in an effective control and the allied problems the Medical Entomologist had given a brief note on the subject in the last report. Since then Dr. Wulker has been able to complete his report on his findings in the Sudan which he has submitted to the W.H.O. and has kindly sent us a copy. This report may be briefly summarised here as follows:—

The new taxonomic name of about the commonest green midge is now changed from *Tanytarsus lewisi* freeman to *Cladotanytarsus lewisi* (freeman).

Dr. Wulker's stay in the Sudan lasted from 1—28 March, 1963; at Khartoum from the 1st. to 9th. March and again from 21st.—27th. March; and he visited Medani (9th.—18th. March). During these visits and the work at Khartoum he tried to detect the endemic enemies of the midges. His main aim was to find endoparasites that kill or sterilize the insect host and thus be useful for the decimation of the pest.

*Endoparasitic worms.* Parasitic worms inside the body of the adult insect were detected by him in the following four species in the Sudan.

(1) *Microchironomus stilifer* (2) *Cryptotendipes graminicolor* (3) *Harnischia nudiforceps* and (4) an undetermined species of *Chironomariae* (*Dicrotendipes*). The places where infections were demonstrated were Khartoum, Wad Medani and Wadi Haafa. Besides the infected adults two infected larvae were found among small samples of larvae taken by grab from the bottom of the river. These larvae were recognised as *Microchironomus stilifer* (Khartoum) and *Harnichis* spp. (Wad Medani). The percentage infection was very low, not exceeding one per cent. Only one species of the helminth parasite was present and it seems the worm is restricted to only the *Cryptochironomus* group. The effect of parasitic and the hosts was intersexuality in males and absence of ovaries in the parasitized *Cryptotendipes* females. Among other natural enemies of *Chironomida*. may be mentioned the larval water mites attached to adults, which did not seem to affect either the vitality or fertility of their host.



Commenting on the appropriate biological control measures the report says „The development of appropriate biological control procedures is not a matter for the simple adaptation of existing techniques. Rather it calls for pioneering studies which, if successful, would open the way towards wider application of vector control through such agents as endoparasitic worms, besides clarifying neglected areas of ecology and parasitology. Of course, as in the case of all such pioneer programs success would by no means be guaranteed.

The need for a thorough taxonomic study of the host insects and their parasites is rightly stressed by Dr. Wulker. Since modern chironomid taxonomy requires a knowledge of all developmental stages, relationship established between the adults and the early stages of a pest will facilitate its quick recognition.

He has agreed with Dr. Lewis that “a complete study of this nature would involve years of work.” As to the identification of helminth parasites the best authority on the subject is Dr. H. E. Welch, of the Canadian Department of Agriculture Entomology Research for Biological control and a closer contact with him whenever necessary will be beneficial.

Host specificity in such studies where other useful fauna such as fish is involved, is of extreme importance. In this connection Dr. Wulker is of the opinion that none of the parasites of these insects thus far have undesirable secondary effects. For example, a fish breeding on parasitized chironomid larvae will not become infected by the parasite concerned, for these are specific for their insect host.

It is hoped that the above account makes clear the various aspects of the problem and the different technical studies involved in our attempt to embark upon the biological control of the chironomids in the Sudan which will be of any substantial contribution towards the integration of control procedures. However in future whenever facilities and technical know-how be available and above all the urgency for an integrated control of the pest be felt, various aspects considered above will have to be taken into account. Besides the routine work of the Section endeavour was as usual made to take up a problem of research during the year.

In view of the increasing importance that the irritability of anopheline and culicine mosquitoes to the residual deposits of DDT and other insecticides has gained recently and because of its bearing on control this kind of response of *A. pharoensis* to various insecticides was studied in the laboratory.

*A. pharaensis* is a strongly anthropophilic mosquito and is incriminated in several parts of Africa as vector of malaria. Besides its being one of the vectors of malaria, its easy availability in & around Medani was the factor that led to its choice as the appropriate mosquito for testing its irritability and the irritance of other insecticides besides DDT.

The irritability of an insect to an insecticide manifests itself in its excitation, by flying away from it which by some authors is termed as the behaviouristic resistance to the campaign of adult killing aimed against the insect.

This behaviour of the mosquito is likely to defeat the very purpose of giving it the necessary lethal dose which is expected to kill or render it incapable of performing the normal functions including feeding mating and reproducing.

With the object, therefore of measuring the irritability to insecticides of a sample of mosquito population and to also test the irritating characteristic of various chemical compounds, the World Health Organization has devised a kit.



## Composition of the kit

The kit includes 30 small tubes for the pre-exposure of the mosquitoes, a special tube carrying box, and 3 light-proof boxes containing exposure chambers.

- (a) *The pre-exposure tubes* (or adaptation tubes) are small cylinders (5.5 x 3 cm) made of transparent plastic; one end is closed by a strip of the same material fitting into a groove; the other end carries a filter disc soaked in mineral oil; it constitutes the only internal surface of the tube on which the mosquito settles.
- (b) *The tube carrying box made of light wood* is 45.5 cm. long, 15.5 cm. high 7.5 cm. deep and opens along two of the long sides. It includes 30 cylindrical compartments; in each of these a pre-exposure tube is placed horizontally; all the bottoms of the tubes (on the side where the papers placed) are illuminated by a uniform light source of the same intensity as that illuminating the exposure box. The inside of the box is painted black.

*The light proof boxes* made of light wood are, 13.5 cm. wide the same height and 9.0 cm. deep. Light can pass through a circular hole (9 cm. diameter) in the back of the box. Inside there are 3 grooves, holding (1) a sheet of translucent glass to insure uniform illumination; (2) the filter paper, placed on another sheet of glass; (3) the exposure chamber, the opening of which is closed by a sheet of transparent plastic. The top of the box moveable and the front side consists of 2 doors; all the internal surface are painted black. Two such light proof boxes with an exposure chamber are used for tests with the insecticide while a third is used exclusively for observing controls.

The impregnated papers accompanying this kit consist of 2 packages each containing 8 paper impregnated with 2 per cent and 4 per cent DDT and one package with oil alone for the controls.

## Experimental Technique

The method for conducting the experiments as recommended by the W.H.O. is briefly summarised below:

### Pre-exposure

One mosquito is introduced into each of the pre-exposure tubes by means of an aspirator. The tube carrying box is now placed at a fixed distance from a source of light of known wattage to give an intensity of 8 foot candles. For different wattage and type of bulb different distance in centimetre is recommended, for instance for a clear bulb of 40 watts a distance of 25 cm. will give the required intensity of 8 foot candles, and a frosted bulb of the same wattage will have to be placed at a distance of 41 cm. to produce same intensity of light through the translucent glass and the paper. The mosquitoes are pre-conditioned for 30 mins. in this way, after which they are generally adopted to the illumination.

### Exposure

Five mosquitoes are now taken from this lot and transferred to the exposure chamber where an impregnation filter paper is already placed in groove so that the mosquitos can land on it besides the plastic cone which is not treated with any insecticide cone sitters can be made to sit on the paper by disturbing with a glass rod or a pencil from outside. Three minutes are allowed for the mosquitos to settle before counting of individual take offs is started. This is continued for a period of 15 mins. and the number of take offs recorded which indicates the irritability of the insect to the insecticide.



A total number of 40 mosquitos (8 lots of 5) are exposed to DDT impregnated paper and 2 lots of 5 to control paper.

### Modified Technique

The work started in the laboratory at first with laboratory bred *Aedes aegypti* and then with *Anopheles pharoensis*.

It was soon realised that this technique could be slightly modified by skipping over one or two of its steps. This not only cuts down the time of experiments but also gives more accurate and dependable data which could be easily interpreted. In the first instance, since our laboratory bred mosquitos as well as those caught from the field are used to almost the intensity of light to which the W.H.O. recommends the specimens should be pre-exposed, we can safely do away with the process of pre-conditioning them for 30 mins. in the pre-exposure tubes. Secondly because it is different to experiment with 5 or even more than one mosquito the following modified method was decided upon.

The age, condition of feeding and the sex of the mosquitos are noted. A single mosquito is transferred to the exposure chamber equipped with the control paper (paper impregnated with oil alone). This box is now placed at the required distance from a source of light fitted with a bulb of known wattage to give an intensity of 8 foot candles. The insect is allowed to settle down on the paper which it normally takes about 2 mins. After the lapse of this period counting of take offs is started and continued for a period of 10 mins. instead of 15 as recommended by the W.H.O.

(b) Now the mosquito from the control chamber is transferred to the box fitted with a DDT impregnated paper and is allowed to settle down for which it takes about 2 mins. The mosquito thus exposed to the insecticide at first lifts its hind legs, flutters its wings then moves about in excitement and then off. In order to determine the time taken by the mosquito before the first take off a stop-watch is clicked on. The running stop-watch is clicked off as soon as the mosquito has flown from the first time and the time noted in mins. and second, which is the excitation time taken by the insect. The stop-watch is also clicked on as soon as the mosquito took off and again clicked off as it settled down on the paper. This is done for each take off and the total time recorded which is actually the total time the insect was air-borne, or away from the impregnated paper and which may be termed the total time of avoidance. In Appendix C are furnished actual figures of 3 such experiments to give an idea of how observations were recorded. Three insecticides viz., DDT, Toxaphene and Dieldrin have been so far tested with fed and unfed females of *Anopheles pharoensis* on the one hand and with males on the other. The total number of females tested was over 400 and the males approximately 200. Laboratory bred *Aedes aegypti* was also tested. These experiments will be continued into next year with other insecticides such as of the Carbamate group until we are in possession of data large enough to be interpreted.

### Simuliidae

With a view to recommending a comprehensive plan for the control of *Simulium* in the country. Mr. Marr of the W.H.O. has been studying the pest for about a year now. His report is awaited. However collections were made by the Section at Abu Hamed during the year. In July last year the breeding of *Simulium* had almost tailed off until it reappeared in December when eggs larvae, pupae and very few adults were detected. In March this year while the Nile was about to start rising the density of flies at Abu Hamed was not very heavy.

Whether the insect is to be controlled or eradicated as a vector of *Onchocerciasis* in parts of the country where it is known to transmit the disease or also from places



where it is only a pest, depends largely on Mr. Marr's report. It may be suggested that its control or perhaps even eradication is possible where it occurs as an 'isolate' but large populations spread over an extensive area are extremely difficult to control.

*Hatchery* - A colony of *Aedes aegypti*, a susceptible Sudan strain, is being maintained for several years now. The mosquito is used for insecticide testing both susceptibility and irritability.

A colony of *Musca* is also being maintained.

A standard susceptible strain of *Musca* maintained under the supervision of the World Health Organization at the Zoological Institute, University of Pavia, Italy is being supplied to different laboratories for comparison with local strains. This Section had also ordered for it. It was despatched by the said Institute but unfortunately by the time it arrived at Khartoum by air some of the pupae had hatched in transit and the adults died and the remaining pupae were not viable as some of them gave rise to adults since. The W.H.O. is contacted again for the same and as soon as a second batch of pupae is received a colony will be run in the Section.

## Miscellaneous

Several touring and collecting parties from the Section visited Abu Hamed, Damazin, Roseires and Singa, Guneid, Khashm el Girba, Kost, besides collections of *Anopheles* and *Phlebotomus* made in the Gezira area.

## Visitors

H-E Dr. Ahmed Ali Zaki the Honourable Minister of Health kindly visited the Section in July 63 while on tour to the Blue Nile Province. He was accompanied by Dr. M. Rashad Farid the Under-Secretary Ministry of Health. The distinguished visitors were pleased to see the work done in the Section.

Dr. M.H. Satti, Director, Medical Research, Ministry of Health and Sir Graham Wilson, Director National Health Laboratories Britain visited the Section on 1st. March, 1964. A demonstration illustrating various insects of medical importance along with pinned and mounted specimens was put up to the distinguished visitors. The working of the Station and the various experiments carried out were explained to Sir Graham and the reprints of papers published by the Section were presented to him.

For this demonstration new exhibits of all medical insects available in the country were prepared such as mosquitoes, *Phlebotomus*, *Simulium* Testse fly and *Tabanidae* in this preparation Abdel Karim eff. Abdalla extended great help to the Medical Entomologist by carrying out the latter instructions carefully, and some drawings were also made.

## Training of Health Staff

Training was given to Sanitary overseers and house Inspectors. A batch of School boys from High School visited the Section that was given a brief talk on the importance and control of disease carrying insects.

Appendix A

DETAILS ABOUT MOSQUITOES IDENTIFIED DURING  
THE YEAR 1963/64

Date of Coll	Locality	Species	Remarks
15. 7.1963	Roseires .. ..	<i>Aedes vittatus</i>	Larvae in concrete basin.
12. 8.1963	„ .. ..	<i>Aedes vittatus</i>	Tabeldia tree
19. 8.1963	Damazin .. ..	<i>Aedes vittatus</i>	Larvae in Tabeldi tree
13. 8.1963	Medani .. ..	<i>Aedes (Dicer) taylori</i>	
13. 8.1963	Municipal gardan ..	<i>Aedes unilineatus</i>	
14. 8.1963	Three hole .. .. near Medani	<i>Aedes (Stegomyia) metallious</i>	
15. 8.1963	Irrigation Dept. garden	<i>Aedes metallicus</i>	
17. 8.1963	Residence of Dr. Mekki Sheikh	<i>Aedes (Steg) metallicus larvae</i>	
Do.	Irrigation Dept. cannal	<i>Aedes (Steg) unilineatus</i>	
Do.	near house of Dr. Osman Abdel Nabi	<i>Metalliscus</i>	
22. 8.1963	Tree hole .. ..	<i>Aedes (Steg) metallicus</i>	
21. 5.1963	Kosti .. ..	<i>Mansonia (Mansonioides) un-uniformis Anopheles coustani</i> Adult	Adult
23. 5.1963	Kosti river bank ..	<i>M. (M) uniformis</i> <i>Culex poicilipes</i>	Several females Males and females
25. 5.1963	El Dueim .. ..	<i>Anopheles pharoensis</i> <i>Culex poicilipes</i>	Females
26. 5.1963	Do.	<i>Anopheles pharoensis</i>	Several females
14. 8.1963	House, Sayed Mahmoud Yousif	<i>Aedes (Stegomyia) metallicus</i> <i>Ae (St) unilineatus</i>	
14. 8.1963	House Dr. Abdel Rahim	<i>Aedes (Diceromyia) taylori</i>	
13. 7.1963	Gezira Research ..	<i>Ae. arabensis</i>	Breeding in pits in Medani ; larvae and adults examined



Appendix A—(Contd.)

MOSQUITOES IDENTIFIED

Date of Coll	Locality	Species	Remarks
15. 7.1963	Roseires .. ..	No. 1 <i>Aedes vittatus</i>	Concrete basin
24. 7.1963	El Damazin native house .. ..	No. 2 <i>Aedes vittatus</i> <i>Culex poicilipes</i> <i>An. pharoensis</i> <i>C. univittatus neavei</i>	„
17. 7.1963	Do. Do.	<i>Aedes (Aedimorphus) dalzieli</i> <i>Aedes (Diceromyia) taylori</i> <i>Aedes (Neomelanoconion) lineatopennis</i> <i>Aedes</i>	„
22. 7.1963	Roseires .. ..	<i>Aedes (Neomelanoconion) lineatopennisaus</i> <i>Mansonia (M) uniformis</i>	
3. 8.1963	El Damazin .. ..	<i>C. ethiopicus</i> <i>Ae. (Aedimorphus) argenteopunctations</i> <i>Aedes (Mucidus) scatophagoides</i>	native houses
18. 7.1963	Damazin .. ..	<i>A. pheroensis</i> <i>E. (M) uniformis</i> <i>C (C) p. fatigans</i> <i>Ac (Neomelanoconion) lineatopennis</i> <i>An. coustani</i> <i>A. gambiae</i>	6—8 p.m. Railway Station
18. 7.1963	Damazin .. ..	<i>Culex (Culex) univittatus neavei</i> <i>Aedes (Stegomyia) vittatus</i>	Bred from larvae
17. 7.1963	Damazin Rest house	<i>C. pipiens fatigans</i>	
Do.	Damazin near river bank .. ..	<i>Aedes vittatus</i>	Larvae
2. 7.1963	Roseires Tabeldi tree hole .. ..	<i>Aedes (S) aegypti</i>	Larvae
17. 7.1963	Damazin river bank	<i>Aedes (S) vittatus</i> <i>C. pipiens fatigans</i> <i>C. (L) tigripes</i> <i>C. univittatus</i>	„
17. 7.1963	Rock hole .. ..	<i>C. pipiens fatigans</i>	Larvae
17. 7.1963	Roseires Tabeldi tree hole .. ..	<i>C. p. fatigans</i>	„
17. 7.1963	Roseires tin can .. ..	<i>Ae aegypti</i>	
22. 7.1963	Roseires native zeers	<i>C. p. fatigans</i>	
24. 7.1963	Roseires village .. ..	<i>Aedes (S) metallions nelulosus</i>	Female adult
14. 8.1963	Tree hole Medani .. ..	<i>Aedes metallious</i>	Larvae
15. 8.1963	House of Dr. Abdel Rahim Abu Eisa .. ..	<i>Aedes (Diceromyia) taylori</i>	„
21. 5.1963	Kosti North shore .. ..	<i>Anopheles squamosus</i> <i>Culex poicilipes</i>	„
21. 5.1963	Kosti .. ..	<i>Culex poieilipes</i>	Mud hole
26. 5.1963	El Dueim .. ..	<i>Uranotaenis sp.</i> <i>C. poicilipes</i>	Immature Larvae
27. 5.1963	El Dueim .. ..	<i>Anopheles squamosus</i> <i>A. gambiae</i>	

# Appendix B

Date of Coll	Locality	Species	M	F	Total	Remarks
December 63	Khashm El Girba	<i>P. antenntus</i>	14—	35	49	
" "	" "	<i>P. clydei latitergn</i>	12—	10	22	
" "	Sareiba	<i>P. schwetzi</i>	7—	5	12	
" "	"	<i>P. africanus</i>	11—	23	44	
" "	"	<i>P. squamipleuris</i>	3—	3	6	
" "	"	<i>P. antennatus</i>	4—	2	6	
" "	"	<i>P. adleri</i>	0—	1	1	
" "	"	<i>P. clydei latiterga</i>	4—	2	6	
" "	"	<i>P. bedford</i>	0—	4	4	
July, 1963	Roseires laota village	<i>P. africanus</i>	24—	54	78	
" "	" "	<i>P. antennatus</i>	1—	2	3	
" "	" "	<i>P. adleri</i>	2—	1	3	
" "	" "	<i>P. bedfordi</i>	0—	4	4	
" "	" "	<i>P. schwetzi</i>	1—	3	4	
" "	" "	<i>P. inermis</i>	0—	1	1	Var Inermis treated here as species
July, 1963	Damazin	<i>P. squamipleuris</i>	4—	4	8	
" "	"	<i>P. antennatus</i>	4—	2	6	
" "	"	<i>P. africanus</i>	9—	31	40	
" "	"	<i>P. bedfordi</i>	0—	9	9	
" "	"	<i>P. schwetzi</i>	1—	4	5	
" "	"	<i>P. clydei latiterga</i>	3—	5	8	
October, 63	Wad Medani	<i>P. africanus</i>	4—	6	10	
" "	" "	<i>P. antennatus</i>	2—	5	7	
" "	" "	<i>P. squamipleuris</i>	0—	1	1	
January, 64	Singa	<i>P. antennatus</i>	24—	19	43	
" "	"	<i>P. africanus</i>	1—	0	1	
March, 1964	Tozi	<i>P. clydei latiterga</i>				
" "	"	<i>P. africanus</i>	32—	68	98	
" "	"	<i>P. clydei latiterga</i>	79—	14	93	
" "	"	<i>P. antennatus</i>	130—	14	161	
" "	"	<i>P. squamipleurus</i>	0—	3	3	
March, 1964	Tozi	<i>P. schwetzi</i>	11—	8	19	
" "	"	<i>P. langeroni</i>				
" "	"	<i>P. langeroni</i>				
" "	"	<i>P. orientalis</i>	7—	4	11	
" "	"	<i>P. rodhaini</i>	1—	0	1	is supposed to be vector

Appendix C

SPECIES ANOPHELES PHAROENSIS  
FED FEMALES : 48 HRS. OLD

DATE	No. of Mosquitoes	F F A m. secs	T D A m. secs	No. of take offs from treated paper			Take offs from control paper			Remarks
				5 mins	10 mins	Total	5 mins	10 mins	Total	
7.11.63 ..	0—1	3—30	0—14	7—	12	19	3—	2—	5	
Do. ..	Do.	0—9	3—53	10	9—	19	3—	3—	6	
Do. ..	Do.	0—18	0—39	9—	28	37	2—	2—	4	

FFA : First light after; : TDA : Total duration are-borne or period of avoidance.



# Appendix D

Name and Initials of Author	Date of Publication	Title of Article	Title of Journal in which published	Volume Number of Journal	Page No. of Journal
Mohd. Qutubuddin	in the press	(1) *Fish, Wildlife and pesticides, the need for joint planning and cooperation.	Sudan Medical Journal	---	---
Do.	Do.	(2) A preliminary note on the Susceptibility of <i>Phlebotomus</i> to insecticides.	Do.		

\* This paper was read by the Medical Entomologist at the Seminar on Vector Control held under the auspices of the W.H.O. at Geneva in November 1962 to which he was invited to lead the discussion on the subject.

SUMMARY REPORT  
of  
THE CHEMICAL LABORATORIES  
FOR THE YEAR 1963/1964

## ADMINISTRATIVE REPORT

### 1. Staff

(i) The staff position on 30th June, 1964 was as follows:—  
GOVERNMENT ANALYST

Abdel Hamid Ibrahim Suliman, D.G.M.C., B.Sc. (London), M.Sc. (London),  
D.I.C.

DEPUTY GOVERNMENT ANALYST

Rifaat Butrous Salama, B.Sc. (Alexandria), M.Sc. (London), D.I.C.

SENIOR SCIENTIFIC OFFICER

Mr. Milos Zivkovic, M.Sc., M. Pharm. (Belgrade)

SCIENTIFIC OFFICERS

Riad Mansour.

Mubarak Ali Karrar, B.Sc. (Khartoum), B.Sc. (Nottingham), M.Sc. (Cardiff)

*Vacant*

ASSISTANT SCIENTIFIC OFFICERS

Joseph Zaki, B.Sc. (Khartoum), Diploma National College of Food Technology  
(London)

Zuheir Abdel Razak Atabani, B.Sc. (Khartoum)

Abdel Wadood El Sayed Osman, B.Sc. (Alexandria).

Ahmed Mahgoub El Hindi, B.Sc. (Khartoum)

Bahieldin Ibrahim El Magboul, B.Sc. (Khartoum)

SENIOR TECHNICAL ASSISTANTS

Abu Bakr Ahmed Akour

Ahmed Abdalla Nagi

Mahdi El Tayeb Haboura

TECHNICAL ASSISTANTS

Hassan Ahmed Yassin

Mahmoud Abdel Ghafour

Ali Hag Ibrahim

Khidir Hassan Babiker

Mahmoud Mohammed Ibrahim

El Rashid El Tahir

*Vacant*

JUNIOR TECHNICAL ASSISTANTS

El Tahir Bedawi

Fadul El Rayah

Tewfig Salih Mohamed

CLERKS

Watt-Wyness Eliaba

Ismail El Kamil El Sayed El Mekki

Osman El Khidr Abu Shama

LIBRARIAN

Faisal Mirghani El Hakeem



- (ii) Mr. Milos Zivkovic, a Yugoslav expatriate, was selected to fill the post of Senior Pharmaceutical Chemist.
- (iii) Assistant Scientific Officer Joesph Zaki has been awarded the postgraduate Diploma in food quality control from the National College of Food Technology, U.K. He is spending at the moment his second year in Chelsea College of Science and Technology, U.K., studying for postgraduate Diploma in analytical chemistry. He is due to return in July 1964.
- (iv) Senior Technical Assistant Abu Bakr Ahmed Akour has been awarded the Associate Membership of the Institute of Science Technologists, U.K. He is spending his second year training in the Government Chemist Laboratories, U.K., and other textiles and leather testing laboratories. He is due to return in July, 1964.
- (v) Assistant Scientific Officer Zuheir Abdel Razak Atabani has been selected to make use of an eight month World Health Organisation Fellowship course on Occupational Health (Scientific methods). The course is being held at Zagreb, Yugoslavia.
- (vi) The vacant post of assistant scientific officer and one of the vacant posts of technical assistants has been filled by new appointments.
- (vii) Clerk Pio Akolong Chol has been transferred and a new typist clerk Osman El Khidir Abu Shama filled his place.
- (viii) There was no change in unclassified staff.

## 2. General

- (i) By the end of 1964 it is expected that the staff position will greatly improve by the return of members of the staff studying or training abroad. Unfortunately we have not been able to send any of the other three assistant scientific officers for courses abroad and it is hoped that they will all proceed on their courses next year.
- (ii) Work on the foundations of the new buildings has been completed. The contract for the construction of the main building has not yet been awarded.
- (iii) Most of equipment provided this year was routine instruments and apparatus and replacements parts. This has enabled us to replace most old instruments, etc. and to equip every section with a complete range of routine apparatus and instruments e.g. automatic balances, furnances, ovens, colorimeters, extractors, distillation units, etc. This is expected to facilitate work greatly.
- (iv) About 85 books were acquired for the library. It is being planned that a new system for indexing be introduced with the help of the University of Khartoum.
- (v) The Ministry of the Interior has decided to assume all responsibilities for forensic work. These Laboratories will however, continue to maintain its forensic section till the Ministry of Interior establishes its own laboratories.

## ANALYTICAL REPORT

### 1. Summary

The following table shows the number of samples received in different categories during the last two years.

	1963/64	1962/63
Waters and Sewages .. .. .	405	328
Foods .. .. .	481	611
Drugs and Pharmaceuticals .. .. .	41	67
Clinical Specimens .. .. .	298	277
Toxicological Specimens .. .. .	181	97
Forensic Specimens .. .. .	153	120
Edible Oils, Seeds and Oil Cakes .. .. .	3,349	3,568
Damaged Materials .. .. .	418	1,011
Miscellaneous .. .. .	445	309
<b>TOTAL ..</b>	<b>5,771</b>	<b>6,388</b>

There is a slight decrease (less than 10 per cent) in the total number of samples submitted. The decrease is solely due to the decrease in the samples of damaged materials submitted and this is mainly due to the overall decrease in import-export business and the weather conditions during the year.

The following table gives the number of samples submitted by the various Government Departments and others during the last two years.

	1963/64	1962/63
Ministry of Health .. .. .	861	1,114
Ministry of Agriculture .. .. .	172	100
Ministry of Animal Resources .. .. .	20	13
Ministry of Commerce, Industry and Supply .. .. .	9	6
Ministry of Communications .. .. .	41	25
Ministry of Works .. .. .	3	40
Customs Department .. .. .	150	75
Armed Forces .. .. .	9	11
Sudan Police .. .. .	180	80
Local Authorities .. .. .	101	40
Khartoum University .. .. .	17	6
Sudan Gezira Board .. .. .	140	88
Other Government Establishments .. .. .	10	20
Commercial Firms and Others .. .. .	4,058	4,770
<b>TOTAL ..</b>	<b>5,771</b>	<b>6,388</b>



The table shows an increase by Government and Semi-Government Departments and a decrease of samples submitted by commercial firms. Still over 70 per cent of the samples was submitted by commercial firms.

The following table shows fees charged for analytical work during the last two years.

						1963/64	1962/63
						LS. m;ms.	LS. m/ms.
Non-Government Establishments	..	..				9,578.635	10.820. 849
Government Departments	..	..	..	..		3,291.350	1,590. 775
TOTAL					..	12,869.985	12,411.624

The analytical fees reflect the variations indicated above. The increase in the total fees is due to the increase in analytical charges that came into effect last year.

2. Water and Sewage

Samples of water and sewages were received from the following sources.

						1963/64	1962/63
Ministry of Health	..	..	..	..	..	101	109
Drilling Engineer	..	..	..	..	..	88	60
Sudan Gezira Board	..	..	..	..	..	35	38
Other Sources	..	..	..	..	..	181	121
TOTAL					..	405	328

There is an increase in the samples received in this category.

3. Foods

The following samples were received during the year.

						1963/64	1962/63
Official Samples	..	..	..	..	..	361	486
Other Samples	..	..	..	..	..	120	125
TOTAL					..	481	611

There is a considerable decrease in samples in this category, mainly in samples submitted by public health authorities.



The following table gives a summary of the different varieties of foods examined in the last two years.

							1963/64	1962/63
Alcoholic driks	..	..	..	..	..	..	87	129
Beans	..	..	..	..	..	..	1	16
Cereals and Cereal Products			..	..	..	..	24	20
Beetroots	..	..	..	..	..	..	—	48
Cheese	..	..	..	..	..	..	8	10
Flour, Durra	..	..	..	..	..	..	2	4
Flour, Wheat	..	..	..	..	..	..	151	93
Fruits, Canned	..	..	..	..	..	..	3	9
Honey and Syrup		..	..	..	..	..	10	8
Meat and Mat Products	..		..	..	..	..	6	8
Milk, Raw	..	..	..	..	..	..	66	71
Milk, Dried	..	..	..	..	..	..	21	5
Rice	..	..	..	..	..	..	—	2
Sardines	..	..	..	..	..	..	1	5
Squashes	..	..	..	..	..	..	5	15
Sugar, Refined	..	..	..	..	..	..	26	26
Tomato, Puree and Sauce			..	..	..	..	40	83
Other Foods	..	..	..	..	..	..	30	59
TOTAL							481	611

No samples of beetroots were received during the year as research in beetroots in the Gezira has stopped. Wheat flour remains to be the main item of food usually examined.

4. Drugs and Pharmaceuticals

There is a decrease in this category with the decrease in the annual Ministry of Health purchases.

5. Clinical Specimens

There is still a further increase in this category. It is of interest to note that in the year 1954/55 the number of clinical specimens was only 17.

6. Toxicological and Forensic Specimens

There is over a 50 per cent increase in the number of specimens submitted in this category over last year.

7. Edible Oils, Seeds and Oil Cakes

The following samples were submitted for analysis during the last two years.

							No. of Samples	
							1963/64	1962/63
Cottonseed	..	..	..	..	..	..	53	119
Groundnut Kernels	..	..	..	..	..	..	3,114	3,178
Sesameseeds	..	..	..	..	..	..	125	64
Castorseeds	..	..	..	..	..	..	11	16
Edible Oils	..	..	..	..	..	..	15	63
Oil Cakes	..	..	..	..	..	..	31	128
TOTAL							3,349	3,568

There is a slight decrease in samples in this category.

## 8. Damaged Materials

The great decrease in samples in this category is responsible for the overall decrease in the total number of samples submitted during the year.

## 9. Misceallaneous Samples

The following table gives details of the various types of samples received in this category.

							1963/64	1962/63
Cigarettes	..	..	..	..	..	..	8	11
Gums	..	..	..	..	..	..	5	9
Fertilisers	..	..	..	..	..	..	14	15
Minerals	..	..	..	..	..	..	2	1
Paints, Varnishes & Polishes	..	..	..	..	..	..	1	3
Pesticides	..	..	..	..	..	..	217	15
Soaps	..	..	..	..	..	..	11	32
Textiles	..	..	..	..	..	..	134	83
Miscellaneous	..	..	..	..	..	..	53	140
TOTAL							445	309

The increase is mainly due to the large number of samples of pesticides examined. Samples of DDT and Endrin Emulsifiable Concentrates were examined for emulsion properties for the Ministry of Agriculture and Sudan Gezira Board.

## RESEARCH AND PUBLICATIONS

(i) Plans are being made to start research in various problems during next year. This will become possible with the return of members of the staff from abroad. Already plans has been laid down for practical research on the effect of sodium nitrate in good and water on arrivals.

(ii) The 1962/63 Annual Report has been submitted but not yet published.



CHAPTER IX  
SCHOOL OF HYGIENE  
ANNUAL REPORT 1963/64

**Staff**

Principal  
Asst. Principal  
Public Health Officer  
Asst. Clerk

**Board of Studies**

The Board of studies which consists of the A/Director (Public Health) as Chairman, Principal School of Hygiene as Secretary, Chief Public Health Inspector and Asst. Principal School of Hygiene as members has held four meetings during the year to discuss the different aspects of the School policy.

**Board of Examiners**

The Royal Society of Health examination which is held in Khartoum, is conducted by Dr. Ali Mohammed Nur, Prof. Mansour Ali Hasseeb, Sayed Abdel Rahman El Agib and Sayed Khalafalla Babiker with the Principal School of Hygiene in attendance.

**Sanitary Overseers**

On selection and when required the candidates receive a six months training in the School of Hygiene, which includes an adequate number of demonstrations to supplement lectures. 22 sanitary overseers from Halfa have conducted their training during the year for Halfa resettlement.

**Public Health Officers**

The basic education now required is that of the secondary standard.

The students take up 3 years course at the end of which they must pass the R.S.H. examination before being awarded the qualifying certificate.

14 students out of 17 have passed the R.S.H. in April 1964 and 3 were referred for a period of 3 months to be examined in September 1964.

20 students were taken this year 1963/64.

**The Curriculum is Briefly as Follows**

*1st Year*

General Science, Building Science, Drawing and Construction Levelling and Geometry. Given at Khartoum Technical Institute.

*2nd Year*

Entomology and Pests Control Helminthology, protozoology, Bacteriology, Water supply and disposal of Waste Matter.



3rd Year

Food and Food Control, Meat Inspection, Milk food production and Manufacture, Housing, Urban and Rural planning Communicable Diseases, School Health, Prison Health, Quarantines, Airports and Seaports, Central statistics, Sanitary Law, Relations between councils and Public Health Staff, Notes on training within industries, Health Education.

The necessary demonstrations that supplement the lectures include visits to Water Works, Food production Places, Schools, Prisons, and Factories, etc. Certain councils meetings are also attended. In addition to the demonstrations and practical training in Khartoum Province and its rural areas, each students spends part of his school vacation in another province beside Khartoum.

The School of Hygiene gave courses to Assistant Sanitary Overseers, Local Government Executive Officers, Health Visitors, Nurses and Medical Assistants, Nursing College, Nursing Intermediate training School.

3 Sanitary Overseers from Yeman have their training during the year.

Building of hostel progressig, and the school building approved, but not yet started.

CHAPTER X

THE GRAPHIC MUSEUM

The Graphic Museum has been closed since its demolition in 1962. The new building is nearing completion and is expected to open soon.

CHAPTER XI

The following Table shows the mean rainfall recorded during the year in provincial meteorological stations :—

PROVINCE	No. of Stations	Mean Rainfall mms.	Highest Recorded Rainfall mms.	Lowest Recorded Rainfall mms.
Bahr El Ghazal .. ..	10	897	1,345	404
Blue Nile .. ..	22	425	1,041	100
Darfur .. ..	13	483	783	241
Equatoria .. ..	23	1,267	2,281	624
Kassala .. ..	19	246	805	6
Khartoum .. ..	7	93	129	51
Kordofan .. ..	16	515	963	126
Northern .. ..	10	17	78	0
Upper Nile .. ..	12	829	1,604	460

# THE PHARMACY AND POISONS ACT, 1963

(1963 Act No. 37)

AN ACT to repeal and re-enact the Pharmacy and Poisons Ordinance, 1939.

In exercise of the powers conferred on him by Constitutional Order No. 1, the President of the Supreme Council for the Armed Forces hereby makes the following Act:—

## PART I PRELIMINARY

### Title

1. This Act may be cited as the Pharmacy and Poisons Act, 1963, and shall come into force on the 1st. October, 1963.

### Repeal

2. The Pharmacy and Poisons Ordinance, 1939, all enactments amending the same, and all rules, orders and regulations made thereunder shall be repealed on the coming into force of this Act:

Provided that all licences, books, registers, lists and authorisations made or kept under any of the provisions of the said Ordinance and in force immediately prior to the repeal thereof shall be deemed to have been made or kept under this Act and shall continue to have effect accordingly until cancelled, replaced, or expired.

### Definitions

3. In this Act unless the context otherwise requires:—

- |                                   |   |
|-----------------------------------|---|
| “ authorised seller<br>of drugs ” | in relation to any class of drugs means any person authorised by the Board under the provisions of Section 4 (3) to sell that class of drugs.   |
| “ Board ”                         | means the Central Board of Public Health.   |
| “ dangerous drug ”                | means any of the poisons appearing in Part I of the Poisons List.   |
| “ dispense ”                      | means to supply a drug on and in accordance with a prescription duly given by a licensed medical practitioner, dentist or veterinary surgeon.   |
| “ drug ”                          | means any medicine or medicinal preparation or therapeutic substance and includes all poisons on the Poisons List.  |
| “ licensed ”                      | in relation to a medical practitioner, dentist or veterinary surgeon means licensed to practise as such in the Sudan in accordance with the provisions of any law relating to such licensing for the time being in force. |
| “ poison ”                        | means any substance included in the Poisons List.   |
| “ poisons list ”                  | means the list prepared in pursuance of section 23.   |
| “ non-poisonous<br>drug ”         | means a drug which is not included in the Poisons List.   |
| “ poisonous drug ”                | means a drug included in Part II or Part III of the Poisons List.   |
| “ registered brand<br>of drug ”   | means any brand, make or mark of drug registered in accordance with Section 22  |
| “ registered<br>pharmacist ”      | means a person whose name is in the Register kept in compliance with Section 8.   |
| “ Wholesale dealing ”             | means sale to an authorised seller of drugs who buys for the purpose of selling again.  |



## PART II

### REGISTRATION OF PHARMACISTS, LICENCING OF PHARMACISTS' BUSINESS AND AUTHORISATIONS TO DEAL IN DRUGS

#### Registration of pharmacists

4. (1) Except as may be specifically provided by any of the provisions of section 20 or 21 no person other than a person duly registered as a pharmacist under the provisions of this Part shall:

- (a) carry on business or practise as a pharmacist;
- (b) in the course of any trade or business prepare, mix, compound, dispense or supply wholesale or by retail any drug except under the immediate supervision of a registered pharmacist;
- (c) describe himself as a pharmaceutical chemist, chemist, pharmacist or druggist or otherwise assume, take, exhibit or in any way make use of any title, emblem, description or addition reasonably calculated to suggest that he is a registered pharmacist.

(2) Every person who acts in contravention of the provisions of this section shall be guilty of an offence and shall be liable on conviction to a fine not exceeding one hundred pounds or to imprisonment for a term not exceeding one year or to both such fine and imprisonment.

(3) Notwithstanding sub-section (1) of this section the Board may, by order published in the Gazette, authorise any person, on such terms and conditions as it may think fit to sell drugs or any class or drugs either by wholesale or retail.

#### Application for registration as a pharmacist

5. Applications for registration as a pharmacist shall be made to the Board in the prescribed form.

#### Qualifications of pharmacists

6. No person shall be entitled to be registered as a pharmacist unless he possesses such qualifications in respect of pharmacy as from time to time may be prescribed by the Board.

#### Certificate of registration

7. A person whose application for registration as a pharmacist has been approved shall, upon the payment of a fee of LS. 5.000 m/ms. be entitled to the issue by the Board of a certificate of registration in the prescribed form which shall be valid until the 31st. December next after issue and shall then expire if not renewed as hereinafter provided.

#### Register of pharmacists

8. The Board shall keep a register in the prescribed form of all registered pharmacists.



### **Annual fee to be paid for retention of name on register**

9. (1) Every registered pharmacist who wishes his name to be retained on the register shall before the 31st of December in each year make an application in that behalf to the Board and pay a renewal fee of LS. 1.000 m/ms.

(2) A registered pharmacist who, having failed to renew his registration after its expiry, carries on business or practises as a pharmacist while such registration remains unrenewed shall be guilty of an offence and shall be liable on conviction to a fine not exceeding fifty pounds or to imprisonment for a term not exceeding six months or to both such fine and imprisonment.

### **Removal of names from the register**

10. (1) The Board may remove from the register the name of any registered pharmacist:—

- (a) who dies, ceases to carry on business as a pharmacist or does not renew his registration for any year; or
- (b) who is convicted of any offence against this Act which in the opinion of the Board renders him unfit to continue to be registered as a pharmacist; or
- (c) who is adjudged by the Board after due inquiry, at which such person shall have an opportunity of being heard, to have been guilty of infamous conduct in any professional or other respect, or of negligence in compounding, dispensing or selling drugs; or
- (d) whose registration was in the opinion of the Board incorrect or was procured by fraud.

(2) A person whose name has been removed from the register shall, if he carries on any business as a pharmacist be guilty of an offence and liable on conviction to a fine not exceeding one hundred pounds or to imprisonment for a term not exceeding one year or to both such fine and imprisonment.

### **Surrender of Certificate of registration**

11. (1) Every registered pharmacist whose name is removed from the register shall surrender his certificate of registration to the Board for cancellation, and in the case of deceased pharmacist the certificate of registration shall be surrendered by his personal representative.

(2) Any person who, without good cause, refuses or fails to surrender his certificate of registration in accordance with subsection (1) of this section shall be guilty of an offence and liable on conviction to a fine not exceeding ten pounds or to imprisonment for a term not exceeding one month or to both such fine and imprisonment.

### **Notice of all certificates of registration to be published in the Gazette**

12. The Board shall cause to be published in the Gazette notifications of all certificates of registration issued under this Part and all removals from the register.

### **Licensing of pharmacists' premises**

13. (1) Every person lawfully carrying on the business of pharmacist in accordance with the provisions of this Part shall cause each premises where such business is being carried on to be licensed for that particular business.



(2) Application for licensing of premises under this section shall be made to the Board in the prescribed form.

(3) The licence of any premises under this section shall become void upon the expiration of thirty days from the date of any change in the ownership of the business carried on therein.

(4) The Board may, for good and sufficient reasons to be stated in writing, refuse to license or may cancel the licence of any premises which in their opinion is or has become unsuitable for the purpose of the business of a pharmacist.

(5) The Board shall keep a register in the form prescribed of all premises licensed under the provisions of this section.

### **Business of pharmacist to be licensed**

14. (1) (a) Every person lawfully carrying on the business of a pharmacist in accordance with the provisions of this Part shall cause such business to be licensed. Any person who contravenes this provision shall be guilty of an offence and liable on conviction to a fine not exceeding one hundred pounds or to imprisonment for a term not exceeding one year or to both such fine and imprisonment, and on conviction for a second or subsequent offence to a fine not exceeding five hundred pounds or to imprisonment for a term not exceeding five years or to both such fine and imprisonment.

(b) Licences for the business of a pharmacist shall be of four kinds:—

- (i) an “A” licence permitting the holder to purchase or sell, by wholesale only, under the personal control of a registered pharmacist or licensed medical practitioner, registered drugs in licensed premises;
- (ii) a “B” licence permitting the holder to sell by retail only registered drugs under the personal control of a registered pharmacist in licensed premises;
- (iii) a “C” licence permitting the holder to purchase or sell by wholesale or retail, under the personal control of a registered pharmacist or an authorised seller of Part 3 poisons, Part 3 poisons only, in licensed premises;
- (iv) a “D” licence permitting the holder to manufacture for sale under the personal control of a registered pharmacist registered drugs in licensed premises;

(2) Application for a licence of a business under this section shall be made to the Board in the prescribed form.

(3) The licence of any business under this section shall become void forthwith —

- (a) upon the expiration of thirty days from the date of any change in the ownership of the business;
- (b) if the person carrying on the business absents himself from the town where the business is carried on for a continuous period of 12 months;



- (c) if the business is transferred to any other premises unlicensed for that particular business ;
- (d) if the business remains open for any length of time in the absence of a registered pharmacist or a licensed medical practitioner or an authorised seller of Part 3 poisons as the case may be according to the provisions of this section ;
- (e) if the registered pharmacist, licensed medical practitioner or authorised seller of Part 3 poisons accepts any employment or undertakes any professional practice other than the business which this section requires to be under his personal control.

### **Issue of licences**

15. Every person carrying on the business of a pharmacist which is required to be licensed in accordance with the provisions of section 14 shall, upon payment of a fee of LS. 10.000 m/ms. is issued by the Board with a licence in the prescribed form which shall be valid until the 31st December next after issue and shall then expire if not renewed as hereinafter provided.

### **Register of licences to be kept**

16. The Board shall keep a register in the prescribed form of licences issued under section 15 of this Act.

### **Retention of licensed business**

17. Every person carrying on the business of a pharmacist which is licensed under section 15 who wishes his business to be retained on the register shall, before the 31st on December in each year, make an application in that behalf to the Board and pay a renewal fee of LS. 2.000 m/ms.

### **Board may refuse issue of a licence.**

18. (1) The Board may, for sufficient reason relating to the business, the owner thereof or the premises, refuse to issue a licence under section 15 or revoke a licence so issued.

(2) Any person aggrieved by a decision made by the Board under subsection (1) of this section shall have the right to apply to the High Court for review of such decision, and the Court's decision on the matter shall be final.

### **Use of descriptions**

19. The owner of a licensed pharmacist's business may use in connection with his business the description of chemist, pharmacist, druggist or dispensing chemist or dispensing druggist and may use the description "drug Store" in connection with a business carrying an "A" licence or the description "Pharmacy" in connection with a business carrying a "B" licence.

### **Representatives of deceased or insolvent owners of licensed pharmacist's business**

20. Notwithstanding anything contained in the foregoing provisions of this Part:—



- (a) if the owner of a licensed pharmacist's business dies, or becomes of unsound mind or is adjudged bankrupt or enters into an arrangement with his creditors his representatives may, with the permission of the Board and subject to such directions and conditions as the Board may in its discretion think fit to impose, carry on the business, and it shall not be necessary for any such representative to be registered as a pharmacist so long as the business continues under the personal control of a registered pharmacist, licensed medical practitioner or authorised seller of Part 3 poisons as the case may be, and for such period not exceeding five years as the Board may decide ;
- (b) the representatives of the owner of a licensed pharmacist's business carrying on business in accordance with the provisions of paragraph (a) of this section may use any title, emblem or description which might have been lawfully used by the owner whose representatives they are.

### **Supply drugs by licensed medical, dental and veterinary practitioners**

21. The foregoing provisions of this Part shall not apply to the supplying of drugs by the following :—

- (a) a licensed medical practitioner or a licensed dentist or a licensed veterinary surgeon in the ordinary course of his practice ;
- (b) any Government servant in the course of his duties as such servant ;
- (c) any Government institution ; or
- (d) any hospital or similar institution exempted by an order, whether general or special, of the Board.

## **PART III**

### **DRUGS**

#### **Registration of drugs.**

22. (1) It shall be unlawful to manufacture, import, distribute, sell, offer for sale, receive for resale, purchase, administer, transport or possess any brand of drugs which has not been registered with the Board.

(2) A person wishing to register any brand of drug shall file with the Board an application in the prescribed form, filling in all particulars required and enclosing :—

- (i) fully packed samples of that brand of drug ;
- (ii) a copy of all claims made by the manufacturer for that brand of drug ;
- (iii) a full description of the clinical and other tests upon which the claims are based ;
- (iv) a registration fee of LS. 1.000 m/ms ;
- (v) any other relevant information that the Board may in any case require.

(3) The Board may register any brand of drug and issue a certificate of registration in the prescribed form subject to any restrictions the Board may see fit to impose.



(4) The Board may, for reasons to be stated in writing refuse to register or refuse to renew the registration of any brand of drugs or cancel the registration of any registered brand of drug, which is, in their opinion, unsuitable for registration at the time.

(5) The Board shall keep a register in the form prescribed of all brands of drugs registered under the provisions of this section.

(6) A certificate of registration granted under this section shall expire after 24 months, but may be renewed, on application for renewal being made in the prescribed form, and accompanied by a renewal fee of P.T. 50, not later than 30 days before the expiry date shown on the certificate.

(7) Every person who contravenes the provisions of sub-section (1) of this section shall be guilty of an offence and shall be liable on conviction to a fine not exceeding one hundred pounds or to imprisonment for a term not exceeding one year or to both such fine and imprisonment.

## PART IV

### **POISONS**

#### **The Poisons List**

23. (1) The Board shall as soon as may be after the coming into force of this Act prepare and publish in the Gazette a list of the substances which are to be treated as poisons for the purpose of this Act. The list may be amended from time to time as the Board may think fit.

(2) The list to be prepared under this section shall be divided into three parts as follows:—

#### *Part 1*

which shall consist of those poisons which are in the opinion of the Board to be regarded as dangerous drugs.

#### *Part 2*

which shall consist of those poisons which are in the opinion of the Board not dangerous drugs but which subject to the provisions of this Act may not be sold except by a registered pharmacist or an authorized seller of Part 2 poisons.

#### *Part 3*

which shall consist of those poisons which subject to the provisions of this Act may not be sold except by a registered pharmacist or an authorized seller of Part 3 poisons.

(3) In determining the distribution of poisons as between Part 2 and Part 3 of the list, regard shall be had to the desirability of restricting Part 3 to articles which are in common use for purposes other than the treatment of human ailments.

(4) The list made under sub-section (1) of this section as in force for the time being is in this Act referred to as the Poisons List, and Part 1, Part 2 and Part 3 poisons mean poisons included in Parts, 1, 2 and 3 respectively of the Poisons List.

#### **Provisions relating to dangerous drugs, importation and exportation of dangerous drugs.**

24. No person shall import into or export from the Sudan any dangerous drug or any plant or part thereof from which such drug can be extracted or manufactured except under a special licence in the prescribed form to be issued by the Board.



## **Manufacture of dangerous drugs**

25. No person shall manufacture or carry on any process in the manufacture of any dangerous drug or cultivate any plant from which such drug can be extracted or manufactured except under a special licence in the prescribed form to be issued by the Board with the approval of the Minister of Health. Such licence shall specify the premises and conditions under which the manufacture or process may be carried on or the place in which and the extent to which such plant may be cultivated.

## **Sale and distribution of dangerous drugs**

26. Except when a dangerous drug is lawfully dispensed by a registered pharmacist or an authorised seller of Part 1 poisons on licensed premises and in pursuance of a prescription given by a licensed medical practitioner or a licensed dentist or a licensed veterinary surgeon or is supplied by a licensed medical practitioner or a licensed veterinary surgeon who dispenses his own medicine in accordance with the conditions hereinafter specified no person shall supply or procure or offer to supply or procure any dangerous drug to or for any person who is not licensed or otherwise authorised to be in possession of such drug, nor or to any person so licensed or authorised except in accordance with the terms and conditions of such licence of authority :

Provided that the administration of a dangerous drug by or under the personal supervision of a licensed medical practitioner or of a licensed dentist in the course of medical or dental treatment or of a licensed veterinary surgeon in the treatment of an animal shall not be deemed to be supplying the drug within the meaning of this section.

## **Provisions as to prescribing dangerous drugs**

27. A prescription for the supply of a dangerous drug shall comply with the following provisions :—

- (a) A dangerous drug shall not be prescribed except on a separate prescription.
- (b) the prescription shall be legibly written in ink and dated, and signed with his full name and address by the medical practitioner, dentist or veterinary surgeon giving it and shall specify the name and address of the person for whose use the preparation is given and the total amount of the drug to be supplied on the prescription.
- (c) a prescription shall not be given by a licensed dentist except for the purpose of dental treatment and shall be marked “for local dental treatment only.”
- (d) a prescription shall not be given by a licensed veterinary surgeon except for the purpose of treatment of animals and shall be marked “for animal treatment only.
- (e) a prescription shall not be given for the use of the prescriber himself.

## **Provision as to dispensing dangerous drugs**

28. The following provisions shall be observed by persons dispensing prescriptions for dangerous drugs :—

- (a) a dangerous drug shall not be supplied or dispensed except on a separate prescription.



- (b) a dangerous drug shall not be supplied more than one on the same prescription unless the prescription so directs in which case the drug may be supplied on more than one but not exceeding three occasions at such intervals as may be specified in the prescription :

Provided that if the dangerous drug prescribed is pethidine or morphine no supply shall be repeated without a fresh prescription, and the maximum quantity to be supplied in consequence of one prescription shall not exceed, in the case of pethidine, 3 ampoules of 100 milligrams each or 6 ampoules of 50 milligrams each or 12 tablets of 25 milligrams each, and in the case of morphine 3 ampoules of  $\frac{1}{3}$  grains each or 4 ampoules of  $\frac{1}{4}$  grains each or 6 ampoules of  $\frac{1}{6}$  grains each and the supply of the aforementioned two drugs shall not be repeated within any single period of seven days without the approval in writing of the Province Medical Officer of Health.

- (c) the prescription shall be marked with the date on which it is dispensed and shall be retained and be available for inspection for two years on the premises where it is dispensed and in the event of the premises ceasing before the expiration of two years to be premises where such a drug may lawfully be dispensed the prescription shall be forwarded to the Board.
- (d) no prescription signed by a licensed medical practitioner outside the Sudan shall be dispensed unless counter-signed by a licensed medical practitioner.

### **Possession of dangerous drugs**

29. No person shall be in possession of or attempt to obtain possession of any dangerous drug unless :—

- (a) he is licensed under section 24 to import or export the drug ; or  
(b) he is licensed under section 25 to manufacture or under section 26 to supply the drug ; or  
(c) he is otherwise authorised by this Act to be in possession of the drug ; or  
(d) the drug was lawfully supplied for his use by a licensed medical practitioner, licensed dentist or licensed veterinary surgeon or on the prescription of such a medical practitioner, dentist or veterinary surgeon and in accordance with the prescription.

### **Record of receipts and sales**

(30) Every person who supplies a dangerous drug shall comply with the following provisions:

- (a) he shall enter or cause to be entered in a register kept for that sole purpose all supplies of the drug purchased or otherwise obtained by him, and all dealings in the drug effected by him (including sales or supplies to persons outside the Sudan) in the form and containing the particulars from time to time prescribed.
- (b) separate registers or separate parts of the register shall be used for :—
- (i) cocaine, ecgonine and substances containing either of them ;  
(ii) morphine and substances containing it ;  
(iii) medicinal opium and substances containing it ;



(iv) hashish and substances containing it ;

(v) pethidine and its derivatives and substances containing any one or more of them.

(c) he shall make every entry relating to any of the drugs purchased or otherwise obtained by him on the day on which the drug is received and with respect to any sale or supply on the day on which the sale or supply is effected.

(d) he shall keep the register on the premises on which his business is carried on so that it shall at all times be available for inspection.

(c) he shall not cancel, obliterate or alter any entry in the register or make any entry which is untrue in any particular. Any mistake shall be corrected by a marginal note or footnote.

(f) registers shall be kept for at least two years after completion.

### **Provisions relating to part 2 poisons, sale of part 2 poisons**

31. (1) Subject to the provisions of this Part no person other than a registered pharmacist shall sell any Part 2 poisons unless :—

(a) he is an authorised seller of Part 2 poisons ; and

(b) the sale is effected on licensed premises ; and

(c) the person to whom such poison is supplied :—

(i) is certified in writing in the manner prescribed and by a person authorised by sub-section (3) of this section to give a certificate for the purpose as being a fit person to be in possession of the particular poison ; and

(ii) is personally known to the authorised seller as a person to whom the poison may properly be sold.

(2) The seller of such poison shall not deliver it until :—

(a) he has made or caused to be made an entry in a book kept for the purpose to be called a Part 2 Poisons Book stating in the form prescribed the date of the sale, the name and address of the purchaser and of the prescriber or of the person if any by whom the certificate required under sub-paragraph (c) (i) of sub-section (1) of this section was given, the name and quantity of the poison sold, and the purpose for which it is stated by the purchaser to be required ; and

(b) the purchaser has affixed his signature to the aforesaid entry.

(3) The Board may authorise fit and proper persons to give certificates for the purposes of paragraph (c) (i) of sub-section (1) of this section, and shall from time to time publish in the Gazette a list of persons so authorised.

### **Provisions relating to part 3 poisons, Sale of part 3 poisons**

32. (1) Subject to the provisions of this Part no person shall sell a Part 3 Poison unless :—

- (a) he is an authorised seller of Part 2 or Part 3 poisons ;
  - (b) the sale is effected on licensed premises ; and
  - (c) the person to whom such poison is supplied is certified in writing in the manner prescribed by a person authorised under sub-section (3) of section 31 to give a certificate for the purpose.
- (2) The seller of such poison shall not deliver it until :—
- (a) he has made or caused to be made an entry in a book kept for the purpose to be called a Part 3 Poisons Book stating in the form prescribed the date of the sale, the name and address of the purchaser and of the person by whom the certificate required under sub-paragraph (b) of sub-section (1) of this section was given, the name and quantity of the poison sold, and the purpose for which it is stated by the purchaser to be required ; and
  - (b) the purchaser has affixed his signature to the aforesaid entry.

### **Provisions in case of certain transactions**

33. (1) Except as hereinafter specifically provided, nothing in the foregoing provisions of this Act relating to the supply of Part 2 and Part 3 Poisons shall extend to or be deemed to prohibit the sale of poisons by an authorised seller of those poisons to :—

- (a) a licensed medical practitioner or dentist or a veterinary surgeon for the purpose of his profession ;
  - (b) any employee of the Government in the course of his duties as such employee ;
  - (c) a Government institution ;
  - (d) any hospital, dispensary or similar institution or any person or institution concerned with scientific education or research if the aforesaid hospital, dispensary, person or institution is approved by an order, whether general or special, of the Board.
  - (e) a registered pharmacist by way of wholesale dealing.
- (2) In any of the cases specified in sub-section (1) :—
- (a) the seller shall obtain before the completion of the sale an order in writing signed by the purchaser stating his name and address, trade or profession, the name and quality of the poison to be purchased and the purpose for which it is required ;
  - (b) the seller shall be reasonably satisfied that the signature is that of the person purporting to have signed the order and that that person carries on the trade, business or profession stated in the order, being one in which the poison to be purchased is used ;
  - (c) if the poison sold is sent by post, it shall be sent by registered post ;

- (d) the provisions of sections 31 (2) and 32 (2) shall be complied with

### **Provisions relating to poisons generally, Labelling of poisons**



34. No person shall supply any poison unless the container of the poison is labelled in the case of a poison supplied on a prescription with the number of the prescription, the name of the person for whom prescribed and the name of the supplier and in the case of a poison not supplied on a prescription with the name of the poison and in the case of a preparation which contains a poison as one of the ingredients thereof, with the prescribed particulars as to the proportion which the poison contained in the preparation bears to the total ingredients, and in every case with the word 'Poison' in Arabic and English and any other prescribed indication of the character of the article and if supplied on sale with the name of the supplier.

### **Storage of poisons**

35. (1) Every person having in his possession any dangerous drug shall keep it in a locked cupboard apart from other drugs and labelled as a dangerous drug both in Arabic and in English.

(2) Every person having in his possession for the purpose of sale any Part 2 or Part 3 poison, shall keep the same :—

- (a) in a cupboard or drawer reserved solely for the storage of poisons :
- (b) in a part of his premises which is partitioned off or otherwise separated from the remainder of the premises and to which customers are not permitted to have access ; or
- (c) on a shelf reserved solely for the storage of poisons, but so that no food is kept directly under or above the shelf and the container of the poison is rendered distinguishable by touch from the containers of articles other than poisons stored upon the same premises.

(3) All poisons shall be stored in securely stapped containers of material impervious to poisons.

### **Medicines supplied by medical practitioners and others**

36. (1) Nothing in section 31, 32 or 34 shall apply :—

- (a) to medicine supplied by a licensed medical practitioner, licensed dentist or licensed veterinary surgeon for the purpose of medical, dental or veterinary treatment as the case may be ; or
- (b) to a medicine supplied or dispensed by any institution exempted from the provisions of Part II of this Act under the provisions of paragraph (d) of section 21, or
- (c) to medicine dispensed by an authorised seller of poisons on licensed pharmacist's premises if the following provisions are complied with :—
  - (i) the medicine shall be distinctly labelled with the name and address of the person by whom it is dispensed ;
  - (ii) the following particulars shall within twenty four hours of the dispensing of the medicine be entered in a book kept for the purpose and to be known as the 'Prescription Book' ;



- (a) the date on which the medicine was dispensed ;
- (b) the ingredients of the medicine and the quantity dispensed ;
- (c) the name and address of the person giving the prescription.
- (d) the name and address of the person to whom the medicine was dispensed.

### **Sale of poisons by automatic machines**

37. No person shall expose or cause to be exposed for sale any poison in or by means of an automatic machine.

### **Penalties**

38. Every person who contravenes any of the provisions of Part IV for which no other penalty is prescribed shall be guilty of an offence and liable, on conviction, if the offence related to a dangerous drug to a fine of five hundred pounds or to imprisonment for five years, if the offence relates to a Part 2 poison, to a fine of two hundred pounds or to imprisonment for two years and if the offence relates to a Part 3 poison, to a fine not exceeding one hundred pounds or imprisonment for a term not exceeding one year or in every case to both such fine and such imprisonment, and on conviction for a second or subsequent offence to a penalty not exceeding five times the penalty which might be imposed for a first offence of a similar nature.

## **PART V.**

### **Miscellaneous provisions powers of search and inspection of books**

39. (1) Any medical or administrative officer or other person duly authorised in writing in that behalf by the Province Medical Officer of Health, in this Part referred to as an authorised officer, may for the purpose of securing compliance with this Act at all reasonable times enter any premises in which a registered pharmacist or an authorised seller of drugs carries on business and any premises in which drugs are stored, packed, prepared, processed or manufactured and in which he has good cause to suspect that a breach of the law in relation to drugs has been committed and may make such examination and inquiry and do such other things, including the taking of samples on payment, as may be necessary for ascertaining whether the provisions aforesaid are being complied with.

(2) Every registered pharmacist and every authorised seller of drugs or owner of a licenced pharmacist's business shall on the demand of an authorised officer produce for inspection his certificate, his authorisation or his licence as the case may be.

(3) Every registered pharmacist and every authorised seller of drugs and every owner of a business in which drugs are stored, packed, prepared, processed or manufactured shall at all reasonable times cause all books kept by him to be open to and available for inspection by an authorised officer.

(4) Any person who contravenes any of the foregoing provisions of this section shall be guilty of an offence and liable on conviction to a fine not exceeding twenty pounds.



## **Production of authorization**

40. An authorized officer exercising his powers under section 39 shall produce his authorization on demand.

## **Drugs to conform to certain standards**

41. (1) The Board may from time to time prescribe standards of nature, substance, quantity or quality to which any drug must conform and no person shall sell or supply any drug which does not conform to the standards so prescribed or which is unwholesome or adulterated or does not conform to the description under which it is supplied.

(2) Any person who contravenes the provisions of sub-section (1) of this section shall be guilty of an offence and shall be liable to a fine not exceeding one hundred pounds or to imprisonment for a term not exceeding one year or to both such fine and imprisonment.

## **Patent medicines**

42. The Board may by order prohibit or control the manufacture, sale, advertisement or possession of any secret, patent, proprietary or homocopathic medicine or preparation.

(2) Any person who contravenes or fails to comply with any order made under sub-section (1) shall be guilty of an offence and liable on conviction to a fine not exceeding one hundred pounds or to imprisonment for a term not exceeding one year or to both fine and imprisonment.

## **Power to make regulations**

43. (1) The Board may make regulations not inconsistent with the provisions of this Act for the purpose of giving further effect thereto and in particular for any of the following purposes :

- (a) regulating the sale and prohibiting or restricting the advertisement of drugs ;
- (b) prohibiting the sale by retail of any specified drug except on a prescription duly given by a licensed medical practitioner or licensed dentist or a licensed veterinary surgeon and for prescribing the form and regulating the use of such prescription ;
- (c) exempting from any of the provisions of this Act relating to the sale of drugs any article or substance containing a drug or any class of such articles or substances ;
- (d) prohibiting, regulating or restricting the manufacture of drugs, pharmaceutical preparations and therapeutic substances ;
- (e) requiring registered pharmacists, owners of licensed pharmacist's businesses, authorised sellers of drugs and manufacturers and their representatives and agents, to supply the Board with all or any of the following particulars with regard to any drug pharmaceutical preparation or therapeutic substance proposed to be manufactured, imported, exported, transported, possessed, sold or labelled by them, namely :—

- (i) particulars of its composition, chemical formula and properties ;
  - (ii) particulars of the manner in which it is used or proposed to be used in medicine or public health, and its effect in that respect ;
  - (iii) particulars of any information with regard to investigations or tests carried out to ascertain its effect when used in medicine or public health.
- (f) the safe custody and storage of drugs ;
  - (g) the import, export, transport, possession, sale and labelling of drugs, pharmaceutical preparations and therapeutic substances ;
  - (h) the size, shape and dimensions of containers in which poisons may be supplied and the materials of which they may or may not be made ;
  - (i) the addition to drugs of specified ingredients for the purpose of rendering them readily distinguishable as poisons ;
  - (j) the compounding and dispensing of drugs ;
  - (k) prescribing the period for which any books or registers required to be kept for the purpose of this Act are to be preserved ;
  - (l) the recognition of any certificate or diploma of competency as a pharmacist issued by any university, college, society, council or board for the purpose of section 6 of this Act ;
  - (m) prescribing the form, and contents of applications, licences and authorisations and the fees payable therefor ;
  - (n) prescribing anything which is by this Act to be prescribed ;
- (2) A copy of all such regulations shall be laid before the Council of Ministers.



TABLE 1 — 1963/1964

## OUT - PATIENTS

## NEW CASES BY DISEASES AND TOTAL

No.	DISEASE	BAHR EL GHAZAL	BLUE NILE	DARFUR	EQUATORIA	KASSALA	KHARTOUM	KORDOFAN	NORTHERN	UPPER NILE	TOTAL	No.
1	Cholera .. .. .	—	—	—	—	—	—	—	—	—	—	1
2	Plague .. .. .	—	—	—	—	—	—	—	—	—	—	2
3	Small-Pox .. .. .	—	—	—	—	—	—	—	—	—	—	3
4	Typhus .. .. .	—	—	—	—	—	—	—	—	—	—	4
5	Yellow Fever .. .. .	—	—	—	—	—	—	—	—	—	—	5
6	T.B. Pulmonary .. .. .	616	1,253	467	228	1,159	1,312	2,046	628	926	8,635	6
7	T.B. Now—Pulmonary .. .. .	462	1,318	119	126	1,360	2,073	324	178	1,326	7,286	7
8	Pneumonia .. .. .	7,285	39,422	9,328	9,908	4,513	29,901	15,541	20,603	9,695	146,196	8
9	Influenza .. .. .	184	17,101	4,550	4,538	13,946	46,294	3,275	8,106	1,002	98,996	9
10	Other Respiratory Diseases .. .. .	78,310	1,013,383	342,683	237,058	347,517	622,118	513,142	330,702	78,105	3,563,018	10
11	Cerebro-Spinal Meningitis .. .. .	43	598	53	50	39	75	47	9	13	927	11
12	Chicken Pox .. .. .	895	7,729	1,022	6,081	3,020	9,958	3,746	2,135	1,906	36,492	12
13	Diphtheria .. .. .	8	247	15	11	44	1,046	78	16	36	1,501	13
14	Encephalitis Lethargica .. .. .	—	—	—	—	—	6	1	—	—	7	14
15	Measles .. .. .	1,087	7,475	1,208	5,583	4,045	10,799	4,146	2,458	3,120	39,921	15
16	Mumps .. .. .	260	8,829	1,716	3,540	2,844	15,501	4,097	3,623	4,315	44,725	16
17	Poliomyelitis, Acute .. .. .	1	34	5	10	—	172	18	10	—	250	17
18	Rheumatism, Acute .. .. .	14,916	22,556	7,452	7,549	4,179	19,984	11,528	18,401	10,956	117,521	18
19	Whooping Cough .. .. .	155	4,738	279	1,437	1,824	6,344	1,187	2,221	1,098	19,283	19
20	Dysentery .. .. .	10,074	62,214	29,204	24,203	14,730	82,356	29,007	39,955	25,232	316,975	20
21	Enteric Fever .. .. .	9	756	904	3	114	452	25	110	53	2,426	21
22	Gastro-enteritis of Children .. .. .	3,375	114,733	26,240	6,877	12,601	78,959	22,452	33,081	13,714	312,032	22
23	Undulant Fever .. .. .	—	33	—	—	2	—	1	32	—	68	23
24	Filariasis .. .. .	73	5	19	4,051	5	4	6	1	38	4,202	24
25	Leishmaniasis .. .. .	6	1,722	60	179	352	32	226	—	1,629	4,206	25
26	Malaria .. .. .	47,347	87,031	82,526	239,451	61,304	28,454	105,938	13,334	137,240	802,625	26
27	Blackwater Fever .. .. .	—	—	—	1	—	—	—	—	—	1	27
28	Onchocerciasis .. .. .	1,620	—	—	2,348	—	2	—	—	—	3,970	28
29	Phlebotomus Fever .. .. .	—	—	—	—	—	1	—	—	—	1	29
30	Relapsing Fever .. .. .	—	—	—	—	—	—	—	—	—	—	30
31	Trypanosomiasis .. .. .	—	—	—	27	—	—	—	—	—	27	31
32	Ancylostomiasis .. .. .	5,570	1,490	122	9,094	71	102	33	239	64	16,785	32
33	Dracontiasis .. .. .	1,330	320	2	2,207	18	212	71	—	185	4,345	33
34	Schistosomiasis .. .. .	909	23,058	16,294	4,120	1,432	7,229	9,197	3,579	1,738	67,556	34
35	Gonorrhoea .. .. .	10,466	9,219	22,732	16,160	7,838	30,942	22,943	822	8,370	129,492	35
36	Soft Sore .. .. .	154	219	1,091	208	416	1,323	255	1	196	3,863	36
37	Syphilis .. .. .	8,487	7,058	49,530	11,194	4,819	46,940	30,357	3,483	14,132	176,000	37
38	Yaws .. .. .	5,571	—	—	16,738	—	—	19	—	4,900	27,229	38
39	Anthrax .. .. .	1	2	1	—	29	—	—	—	6	39	39
40	Hydrophobia Human .. .. .	3	4	1	1	2	—	10	—	—	21	40
		199,217	1,432,547	597,623	612,981	488,223	1,042,591	779,716	483,727	319,995	5,956,620	





No.	DISEASE	BAHB EL GHAZAL	BLUE NILE	DARFUR	EQUATORIA	KASSALA	KHARTOUM	KORDOFAN	NORTHERN	UPPER NILE	TOTAL	No.
	<i>B/F.</i> ..	199,217	1,432,547	597,623	612,981	488,223	1,042,591	779,716	483,727	319,995	5,956,620	
41	Leprosy .. ..	279	194	66	661	13	272	124	9	56	1,674	41
42	Madura Disease .. ..	—	627	3	1	27	464	80	75	10	1,287	42
43	Tetanus .. ..	57	178	35	44	23	12	35	10	88	482	43
44	Heat Storke Sydrome .. ..	—	1	—	—	35	—	6	—	—	42	44
45	Confinements .. ..	653	3,935	459	804	1,156	2,037	1,441	568	144	11,197	45
46	Gynecological .. ..	1,724	45,490	15,415	3,536	9,486	58,101	24,575	15,885	2,349	176,561	46
47	Diseases of Pregnancy and Parturition .. ..	714	13,574	4,342	3,145	658	19,245	20,116	8,542	94	70,430	47
48	Puerperal Fever .. ..	24	102	96	10	137	105	307	952	34	1,767	48
49	Wounds and Injuries .. ..	94,000	937,796	272,007	310,929	267,979	611,446	394,610	365,915	104,329	3,359,011	49
50	Tropical Ulcer .. ..	3,081	1,811	5,141	27,416	2,490	1,814	2,256	—	3,528	47,537	50
51	Diabetes .. ..	3	768	291	183	714	5,946	675	1,053	15	9,648	51
52	Pellagra .. ..	18	310	—	—	—	—	—	6	48	382	52
53	Scurvy .. ..	484	2,450	862	480	250	218	1,756	1	289	6,790	53
54	Neoplasms, Malignant .. ..	1	96	273	24	41	499	250	39	4	1,227	54
55	Newplasms, Non-Malignant .. ..	7	5,361	185	60	261	2,813	2,801	53	6	11,547	55
56	Trachoma .. ..	407	69,831	30,378	1,201	7,505	49,858	3,781	122,475	3,277	288,713	56
57	All other eye diseases .. ..	28,950	720,999	169,805	96,266	249,334	308,144	229,165	304,271	52,393	2,159,327	57
58	Ear Diseases .. ..	15,349	257,758	58,429	32,821	58,415	98,701	57,896	63,001	45,963	688,133	58
59	Skin Diseases .. ..	32,800	115,703	85,820	105,998	25,629	82,735	66,745	33,753	34,893	584,076	59
60	Alimentary Diseases .. ..	66,571	1,767,550	293,949	242,916	344,050	640,548	475,287	363,586	94,150	4,288,607	60
61	Circulatory Diseases .. ..	4,518	219,929	25,172	5,520	36,903	64,629	37,754	64,744	6,205	465,374	61
62	Genito-Urinary Diseases .. ..	5,569	212,234	74,743	13,718	29,050	210,914	52,801	83,627	13,618	696,274	62
63	Organic Nervous Diseases .. ..	7	5,011	1,669	21	2,174	4,930	24,094	18,031	1,930	57,867	63
64	Functional Nervous Diseases .. ..	44	3,014	28	67	122	5,289	137	—	—	8,701	64
65	Fever of Uncertain Origin .. ..	47,277	93,658	34,529	28,385	13,537	266,003	24,634	64,385	101,328	673,736	65
66	All other Conditions .. ..	76,120	837,545	171,674	225,848	190,437	785,029	298,927	165,609	135,593	2,886,782	66
67	Poisoning .. ..	—	69	—	—	197	288	—	166	—	720	67
68	Infectious Hepatitis .. ..	258	605	449	1,927	593	1,188	877	288	887	7,072	68
	TOTAL NEW CASES ..	578,132	6,749,146	1,843,443	1,714,962	1,729,439	4,263,819	2,500,646	2,160,771	921,226	22,461,584	
	ATTENDANCES : MEN ..	689,918	3,251,913	943,547	1,142,864	877,794	2,808,837	1,470,400	1,000,824	467,662	12,653,759	
	: WOMEN ..	349,200	3,070,043	777,440	800,893	673,807	2,000,570	1,274,813	1,363,671	429,905	10,740,342	
	: CHILDREN ..	391,491	4,182,925	1,190,219	1,060,054	1,276,284	2,237,003	1,683,941	1,444,857	536,243	14,003,019	
	TOTAL ATTENDANCES ..	1,430,609	10,504,881	2,911,206	3,003,811	2,827,885	7,046,410	4,429,154	3,809,352	1,433,810	37,397,118	
	MISSION OUT-PATIENTS INCLUDED ABOVE	—	—	—	—	—	4,864	—	—	—	—	
	MISSION ATTENDANCES INCLUDED ABOVE	—	—	—	—	—	55,551	—	—	—	—	





TABLE II — 1963/64

ADMINISTRATIONS AND DEATHS BY DISEASES

No.	D I S E A S E	BAHR EL GHAZAL		BLUE NILE		DARFUR		EQUATORIA		KASSALA		KHARTOUM		KORDOFAN		NORTHERN		UPPER NILE		TOTAL		No.
		Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	
1	Cholera .. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
2	Plague .. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
3	Small-Pox .. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
4	Typhus .. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
5	Yellow Fever .. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
6	T.B. Pulmonary .. ..	288	19	1,060	55	279	21	228	18	713	35	920	85	415	33	265	16	451	34	4,619	316	6
7	T.B. Non-Pulmonary .. ..	127	3	381	8	70	2	41	1	250	11	181	2	117	10	49	—	174	8	1,390	45	7
8	Pneumonia .. ..	522	45	1,012	42	1,098	24	1,660	86	966	49	1,328	40	1,076	77	545	14	550	29	8,757	406	8
9	Influenza .. ..	84	—	202	5	23	—	151	2	160	1	107	—	23	—	136	—	10	—	896	8	9
10	Other Respiratory Diseases	355	16	3,183	50	510	16	597	11	1,857	25	1424	9	1,619	49	1,354	23	340	14	11,269	213	10
11	Cerebro-Spinal Meningitis ..	43	10	528	43	53	3	50	9	39	11	68	11	45	11	9	3	6	1	841	102	11
12	Chicken Pox .. ..	495	1	386	3	213	—	630	1	248	1	75	1	125	—	36	—	205	—	2,413	7	12
13	Diphtheria .. ..	8	1	216	27	15	—	11	2	42	6	75	1	51	6	16	1	43	5	477	49	13
14	Encephalitis Lethargica ..	—	—	2	—	—	—	—	—	—	—	2	—	1	1	—	—	—	—	5	1	14
15	Measles .. ..	587	—	353	16	261	—	755	2	308	10	243	8	289	5	81	2	457	16	3,334	59	15
16	Mumps .. ..	160	—	86	1	130	—	67	—	34	2	13	—	49	1	85	—	77	—	701	4	16
17	Poliomyelitis, Acute .. ..	1	—	33	—	4	1	9	—	—	—	47	1	20	1	10	—	—	—	124	3	17
18	Rheumatism, Acute .. ..	101	1	514	1	141	—	20	2	214	—	180	2	114	5	530	3	323	2	2,337	16	18
19	Whooping-Cough .. ..	155	—	160	4	35	1	40	2	94	1	125	1	35	—	49	1	88	11	781	21	19
20	Dysentery .. ..	195	5	982	25	535	11	602	34	848	20	1,017	36	464	22	585	3	1,188	67	6,416	223	20
21	Enteric Fever .. ..	9	—	689	6	904	135	3	1	104	3	448	8	20	—	96	3	53	2	2,326	158	21
22	Castro-enteritis of Children	144	13	2,486	291	298	23	308	34	961	78	1,188	78	623	74	1,464	115	687	47	8,159	753	22
23	Undulant Fever .. ..	—	—	32	—	—	—	—	—	1	—	1	—	1	—	32	—	—	—	67	—	23
24	Filariasis .. ..	3	—	5	—	3	—	65	2	3	—	4	—	2	—	1	—	6	—	92	2	24
25	Lieshmaniasis .. ..	3	—	740	40	7	—	158	7	318	16	32	—	188	6	—	—	460	12	1,906	82	25
26	Malaria .. ..	1,108	53	1,768	35	632	19	2901	94	741	14	339	—	2,146	60	567	5	1,252	24	11,454	304	26
27	Blackwater Fever .. ..	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	27
28	Onchocerciasis .. ..	28	—	—	—	—	—	12	—	—	—	2	—	—	—	—	—	—	—	42	—	28
29	Phlebotomus Fever .. ..	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	29
30	Relpasing Fever .. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30
31	Trypanosomiasis .. ..	—	—	—	—	—	—	27	4	—	—	—	—	—	—	—	—	—	—	27	4	31
32	Ancylostomiasis .. ..	194	15	4	—	35	—	344	9	7	—	16	—	5	—	5	—	—	—	610	24	32
33	Dracontiasis .. ..	30	—	10	—	—	—	102	—	7	—	—	—	4	—	—	—	—	—	153	—	33
34	Schistosomiasis .. ..	12	—	557	12	58	2	193	8	41	2	293	5	47	1	251	2	58	2	1,510	34	34
35	Gonorrhoea .. ..	28	1	13	—	93	—	203	—	12	—	1	—	8	—	2	—	67	—	427	1	35
36	Soft Sore .. ..	1	—	11	—	1	—	2	—	—	—	—	—	7	—	—	—	2	—	24	—	36
37	Syphilis .. ..	22	2	14	1	283	—	264	3	10	1	30	1	4	—	8	—	49	—	684	8	37
38	Yaws .. ..	12	—	—	—	—	—	145	1	—	—	—	—	1	—	—	—	35	—	193	1	38
39	Anthrax .. ..	—	—	1	—	1	1	—	—	12	—	—	—	—	—	—	—	—	—	14	1	39
40	Hydrophobia Human .. ..	3	2	4	3	1	1	1	1	1	1	—	—	8	8	—	—	—	—	18	16	40
C/F. .. ..		4,749	187	15,432	668	5,683	260	9,790	334	8,021	287	8,160	289	7,507	370	6,176	191	6,581	274	72,068	2,860	







